THE AUTOMOBILE

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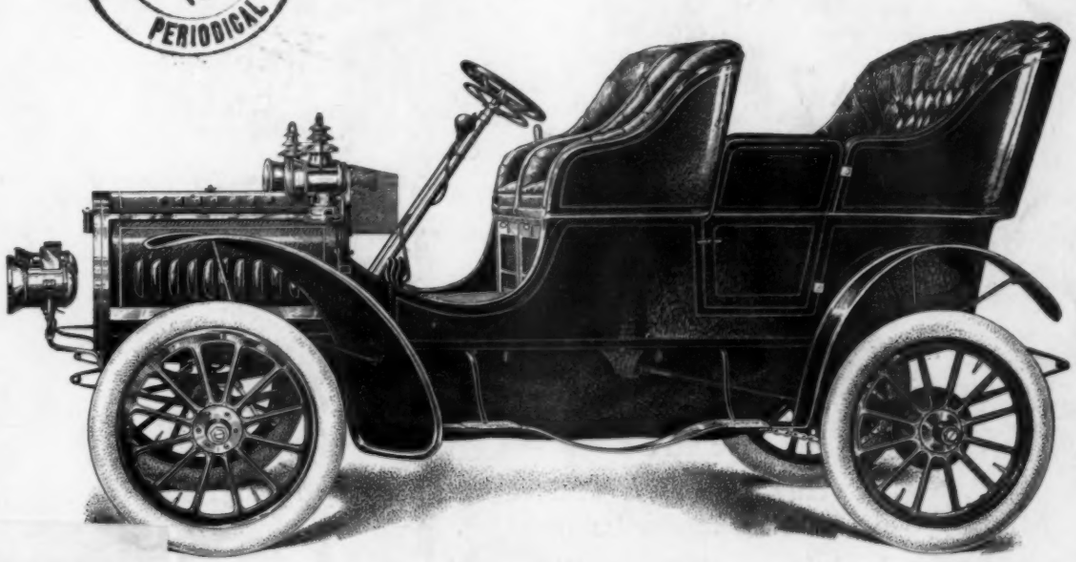

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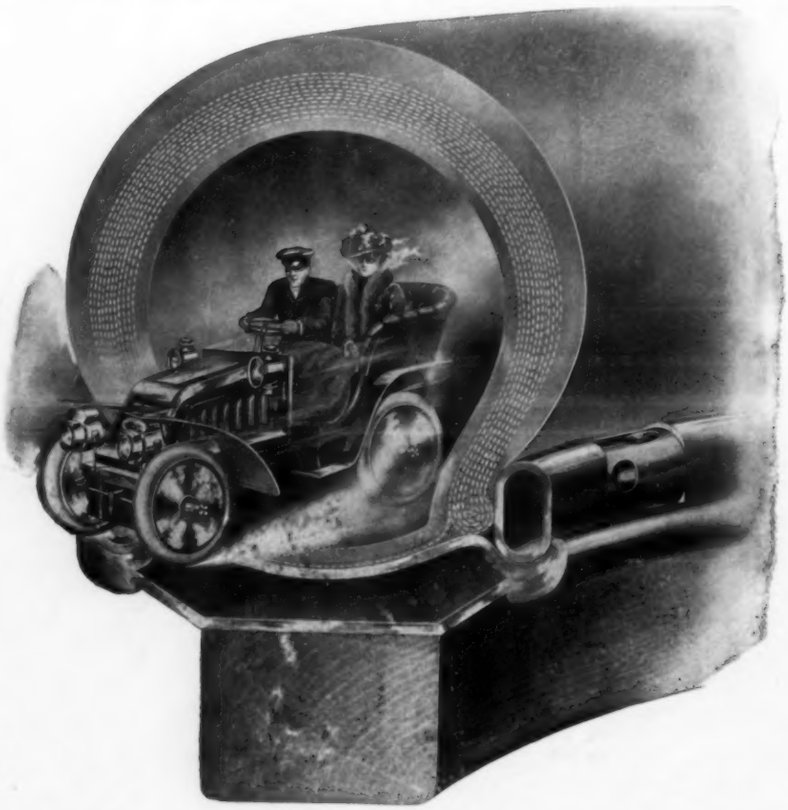

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THE AUTOMOBILE

VOL. XII. NEW YORK—SATURDAY, JANUARY 28 1905 CHICAGO NO. 4

ONE MILE—34 1-5 SECONDS.

H. L. Bowden, of Boston, Makes the New Mark at the Florida Meeting in His 8-Cylinder Mercedes—Louis S. Ross in an American Car Sets the Mile Mark for Steamers at 38 Seconds Flat.

By Wire from Our Own Correspondent.

ORMOND, Fla., Wednesday, Jan. 25.—Bounding over the smooth, hard beach like a ship on a stormy sea in his 120-horsepower eight-cylinder Mercedes, H. L. Bowden, the Boston automobilist, succeeded to-day in establishing a new world's record by covering a mile on the Ormond-Daytona wave-washed speedway in 34 1-5 seconds, or a fraction over 105 miles an hour. Bowden, clad in his unique suit of golden brown plush, handled the Flying Dutchman with consummate skill and nerve as it dashed over nature's greatest race-course, and succeeded by a fraction of a second in reducing the mark of 34 2-5 sec-

AT THE FLORIDA BEACH RACES—GROOMING ONE OF THE FAST CARS BEFORE STARTING IN PRELIMINARY TRIALS

EARLY ARRIVALS AT THE ORMOND-DAYTONA BEACH ENJOYING WINTER BATHING.

onds, made ten minutes before by Arthur McDonald in the Napier, and taking a good slice from the 38 seconds made by Ross, who is the first man this year to shave the 39 second mark made at the last meeting by W. K. Vanderbilt, Jr. Records fell like Wall street stocks in time of panic, aided by a forty-mile breeze, which brought with it the coldest weather that Florida has seen in years. The temperature —far below freezing point—made the beach uncomfortable for all who failed to bring fur coats, and fires are burning in all the orange groves to save the crops.

After Bowden's great ride it was announced by the American Automobile Association officials that the time could not be accepted, because his car weighed about 400 pounds over the limit of 2,204 pounds. This is ridiculed by motorists here.

Arthur McDonald's mile of 34 2-5 seconds with the 90-horsepower Napier was driven in almost reckless fashion. Clad in a summer suit of white, McDonald, who, by the way, is a Scotchman, scored a popular triumph when he brought the historic mark below 35 seconds, which experts had predicted was the limit of speed on the Florida coast.

The first record-breaking performance of the day was furnished by Louis S. Ross, a wealthy young contractor of Newton, Mass., who drove his freak steam machine—shaped like a cigar and called the Teakettle —a mile in 38 seconds. His journey was extremely dangerous, for the light machine swerved badly just after crossing the tape, and the 600 pounds pressure of steam threatened to take it into the ocean before he could get back on the course. The operator quickly brought the machine to the hard part of beach, however, and it continued the wild journey that places the name of Ross on the slate of record holders.

Determined this year to get the mile honors, H. L. Bowden, who is a wealthy fiber manufacturer in Boston, decided two months ago to take a four-cylinder, 60-horsepower engine from his Mercedes car, and couple it tandem fashion with a similar engine taken from his motor boat, the *U. S. Mercedes.* Aided by his two expert chauffeurs, Chas. Meyer, of Cleveland, and Chas. Basil, the racing freak was completed a week ago and brought to Ormond.

The frame had been lengthened by inserting two steel plates 20 inches long in the center, but aside from this long wheelbase, it looks like a regular stock Mercedes. So powerful is the engine that the vibration during a ride is such that every nut and bolt has to be gone over and tightened up before another trip can be safely made.

After Ross had broken the record Bowden expressed the wish that it would remain to his credit, but when McDonald gave it such an awful cut, he asked permission to drive his big car. Making a flying start of little more than a mile, the long white Mercedes came flying past the three hundred spectators at the starting point in front of the Daytona clubhouse like the phantom of the "Flying Dutchman" tale.

The rhythmic tune of the engine showed it to be working in faultless fashion, and presaged a great mile.

Bang! went the starting pistol as he crossed the tape at thrilling speed, and the machine, with its two begoggled, weird-looking occupants, whirled down the course, leaving a trail of sand that was quickly obliterated by the wind, while the sound of explosions grew fainter and fainter.

At the wheel was the sturdy pilot, a typical American, dressed to defy the cutting wind, with a little cap, goggles and a suit of golden brown plush and brown leggings. At his side was Charles Basil, himself a driver of note, working energetically at the oilers and gasoline pressure pump.

"My, but he's going," exclaimed every one.

Ten seconds on the watch and he was well down the course, seemingly going faster than ever.

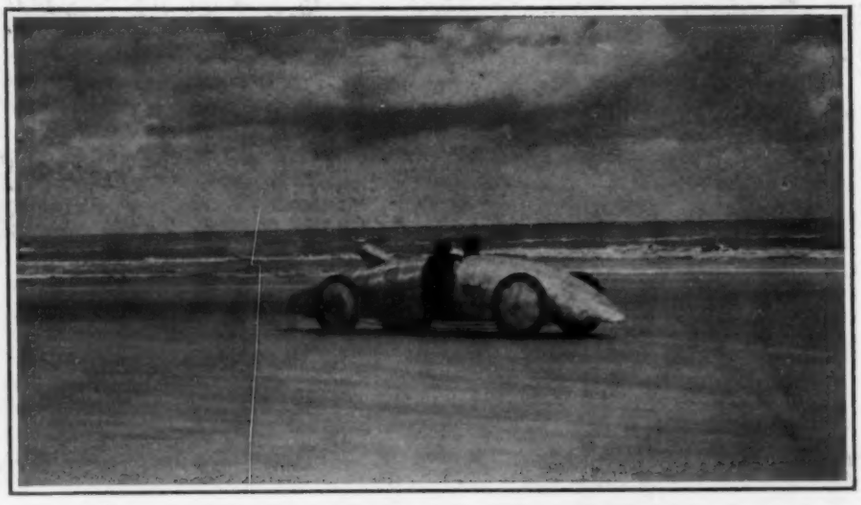
Twenty seconds, and to the naked eye he appeared to be nearing the crowd which gathered at the finish, a mile away.

"He'll do it sure," were the words passed around, as thirty seconds saw him near the end of his journey.

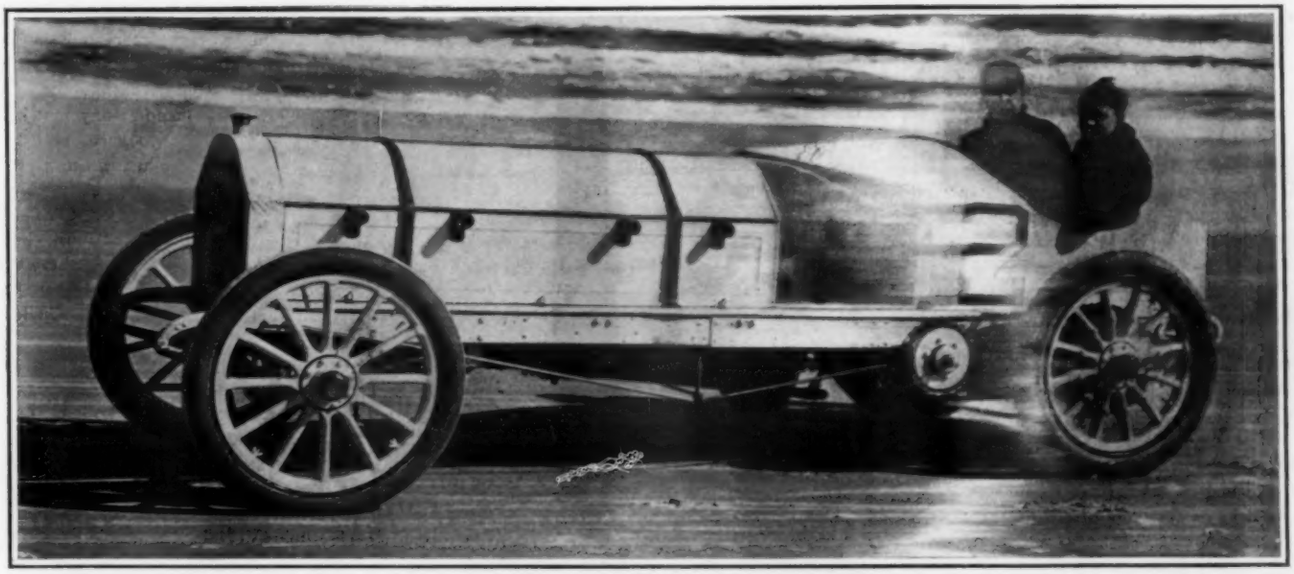
"Thirty-three seconds!" yelled Timer McMurty, but there was no sound from the spectators, whose nerves were on edge, and then Bang! came the report of the finishing gun. A hurrah from the officials, taken up by the crowd, and the official announcement of 34 1-5 seconds for the mile.

Wild cheers greeted Bowden as he returned to the starting line, and a hundred or more cameras snapped as he brought his car to a stop.

"It was a great ride," said Mr. Bowden to THE AUTOMOBILE representative, "but I think I can go a bit faster. My gear was a little too high, but, all things considered, I am very well pleased, for it has been my ambition ever since I took up the sport to hold the greatest of all records. I have only one speed on the machine. A 32-tooth sprocket on the front and a 38-tooth sprocket on the rear. The engine turned up about 1,000 revolutions. The beach was not quite as good to-day as I have seen it, and a couple of times we rocked considerably. I



LOUIS S. ROSS DRIVING SPECIAL STEAM CAR WHICH MADE MILE IN 38 SECONDS.



H. L. BOWDEN, OF BOSTON, IN 120-H.P. 8-CYLINDER MERCEDES "FLYING DUTCHMAN II," WHICH WON THE MILE RECORD IN 34 1-5 SECONDS.

don't think 30 seconds can be reached by any machine this year. A car of about 200 horsepower might make the two miles a minute which is now the aim of drivers."

Aside from the record breaking, there were some good competitions, notably the one mile race for the Sir Thomas Dewar trophy, which was won by Louis S. Ross with his steam Teakettle, beating Arthur McDonald by 2-5 of a second, with William Wallace third and Barney Oldfield fourth. The latter said before the start that he had no chance with his 50-horsepower car, yet in his heat he scored over Sartori, Deplus and Stevens.

William K. Vanderbilt, Jr., the hero of last year's meeting, finished last in his heat, which was won by McDonald. In the record trials Mr. Vanderbilt could not come within three seconds of his last year's mark. He admitted that he was geared too high, but said that the Napier and some other cars were faster than the one he guided. His defeat was a great disappointment to those who had predicted that he would spring a surprise.

The star of the day in the regular races was Louis S. Ross, who drove his special built steamer, made by coupling two 10-horsepower Stanley engines. The ruddy-faced New Englander established a new mile competition record in the first heat of the Sir Thomas Dewar trophy race, when he negotiated a mile in 41 3-5 seconds, scoring over Arthur MacDonald, Edward Hawley and Vanderbilt. He had no trouble winning the final from the Scotchman.

He also outclassed all other steamers in the mile event for the Col. R. C. Clowry trophy, and will more than likely take the Corinthian Cup, two heats of which were run to-day, with the final to come to-morrow.

The summaries follow:

Mile Record Trials.—H. L. Bowden, 120-h.p. Mercedes, time, 34 1-5; Arthur McDonald, 90-h.p. Napier, time 34 2-5; Louis S. Ross, 20-h.p. Stanley, time 38; William Wallace, 90-h.p. F.I.A.T., time 39 1-5; S. B. Stevens, 90-h.p. Mercedes, time 39 2-5; Edward Hawley, 90-h.p. Mercedes, time

NAPIER 6-CYLINDER 90-H.P. CAR DRIVEN 5 MILES IN 3 MINUTES 17 SECONDS BY ARTHUR MC DONALD OF LONDON.

40 2-5; W. K. Vanderbilt, Jr., 90-h.p. Mercedes, time, 42 1-5; Charles Deplus, 80-h.p. Pipe, time 43 3-5; E. H. Fredericks, 90-h.p. Mercedes, time 44 1-5; Paul Sartori, 90-h.p. F.I.A.T., time 45 1-5; M. G. Bernin, 60-h.p. Renault, time 45 1-5; Guy Vaughn, 40-h.p. Decauville, time 48 1-5; Webb Jay, 15-h.p. White, time 53; James L. Breeze, 40-h.p. Mercedes, time 53 2-5; Oscar Hedstrom, 3 1-2-h.p. Indian motorcycle, time 1:02; James L. Breeze, 18-h.p. Mercedes, time 1:03 1-5.

One Mile International Championship (Sir Thomas Dewar Cup).—First heat won by Louis S. Ross, 20-h.p. special steamer, time 41 3-5; Arthur McDonald, 90-h.p. Napier, second, time 43 4-5; Edward Hawley, 90-h.p. Mercedes, third; W. K. Vanderbilt, Jr., 90-h.p. Mercedes, fourth. Second heat won by William Wallace, 90-h.p. F.I.A.T., time, 49; E. J. Frederick, 90-h.p. Mercedes, second; time 54; M. G. Bernin, 60-h.p. Renault, third. Third heat won by Barney Oldfield, 50-h.p. Peerless, time 49 3-5; Paul Sartori, 90-h.p. F.I.A.T., second, time 52 4-5; Charles Deplus, 80-h.p. Pipe, third; S. B. Stevens, 90-h.p. Mercedes, fourth. Final heat won by Louis S. Ross, 20-h.p. special steamer, time 42; Arthur McDonald, 90-h.p. Napier, second, time 42 2-5; William Wallace, 90-h.p. F.I.A.T., third, time 48 1-5; Barney Oldfield, 50-h.p. Peerless, fourth.

Mile Trials for Stock Cars.—Webb Jay, 15-h.p. White, time 1:00 3-5; W. E. Evans, 10-h.p. Autocar, time 1:37.

One Mile, for Steam Cars, for the Col. R. C. Clowry Trophy.—Won by Louis S. Ross, in 20-h.p. special racer, time 57 2-5; Webb Jay, 15-h.p. White, second; J. W. Edmonds, 8-h.p. Stanley, third; R. R. Kimball, 10-h.p. Stanley, fourth.

One Mile, Amateur Owners to Drive, for Weir's Corinthian Cup.—First heat won by W. K. Vanderbilt, Jr., 90-h.p. Mercedes, time 47 3-5; E. R. Thomas, 90-h.p. Mercedes, second; B. M. Shanley, Jr., 90-h.p. Mercedes, third, time 55. Final heat won by S. B. Stevens, 90-h.p. Mercedes, time 45 2-5; William Wallace, 90-h.p. F.I.A.T., second, time 46 2-5; James L. Breeze, 40-h.p. Mercedes, third. Final to be run on Thursday.

Tuesday's Events.

Special Telegram.

ORMOND, FLA., Jan. 24.—Driving his ponderous six-cylinder Napier racer of 90-horsepower, Arthur McDonald, on the Ormond-Daytona beach to-day established a new world's record for five miles by covering the distance in 3:17 at the rate of 39 2-5 seconds for each mile, as against the best previous mark of 3:31 1-5, made by W. K. Vanderbilt, Jr., on the beach last year. The performance was the only redeeming feature of the first day's racing, there being no other sensational driving, as the day's events were all for stock cars.

It is worthy of note that in these last named events Chas. Soules, with a 30-horsepower Pope-Toledo, captured three first prizes out of four starts and was second in the handicap, in which he was the scratch man.

It was Arthur McDonald's first public appearance in this country, he having come from London with the Napier for a try on America's great speedway of sand. After a trial at five miles, in which he made figures less than a second away from the record, he asked for another opportunity, because some non-competing cars interfered with his ride near the finish. The request was granted by the officials, and the sturdy Englishman crossed the tape at a speed which promised new records.

The beach was not at its best, and the green-colored car, on account of its long wheel-base, rocked and swayed a little, but

NEW FIGURE AT A RACE MEET.
New York Bookmaker Ready for Business at Ormond-Daytona Beach.

not so much as to interfere with the steering. He quickly disappeared from view down the beach, leaving a trail of sugary sand and a few minutes later the official timers announced 3:17 as the new world's record. McDonald was received with enthusiastic cheers by the 4,000 spectators, who had gathered on and around the Daytona Club house.

The racing to-day was on the Daytona end of the beach, and will be held there to-morrow as well, because a portion of Ormond is too rough for high speed. The prevailing west wind has kept the course in poor condition and the enthusiasts are praying for it to shift to the northeast, which is the favorable direction for record breaking. On the course to-day was the greatest crowd of automobile racing followers that has ever been seen in Florida. There was a great outpouring of visitors from the crowded hotels of Ormond and Daytona, while hundreds came down on the special train from Jacksonville and St. Augustine. Among the interested spectators were Sir Thomas Dewar and the Duke and Duchess of Manchester.

Barney Oldfield announced to-day that his car was not in condition to race, and he would not be a competitor during the meeting. It developed some engine troubles last week in practice. Moreover, Oldfield says the car is intended for track work, but it is not quite fast enough for straightaway racing, as it has an engine of only 50 horsepower. It has covered practice miles in 44 seconds.

The stock car racing was interesting to the tradesmen and experts, although the Pope-Toledo driven by Soules so far outclassed its competitors as to make the competition uninteresting.

Hiram Percy Maxim was not ready to start in one of the races and M. J. Budlong, of the Electric Vehicle Co., of Hartford, made his debut and cleverly drove the 18-horsepower Columbia to victory in the ten-mile event in 14:12 3-5.

All friction over the Sir Thomas Dewar trophy for the mile championship was eliminated to-day by the placing of Harlan W. Whipple, president of the American Automobile Association on the board of trustees. The contest is to be a mile straightaway once a year on the Ormond-Daytona beach, and not more than once a year at some other place. The trustees are H. W. Whipple, president of the American Automobile Association; S. A. Miles, manager National Association of Auto Manufacturers; J. B. Parkinson, secretary Florida East Coast Auto Association; George W. Rowe, president New York Press Club; W. J. Morgan, New York Motor Club; H. L. Bowden, Massachusetts Auto Club; Isaac B. Potter, president American Motor League; Angus Sinclair, New Jersey Auto and Motor Club, and Fred. Glassup, representing Sir Thomas Dewar.

The summaries follow:

One kilometer (.621 of a mile), class B, 851 to 1,432 pounds.—Webb Jay, 15 h. p. White, 1st, time 44 2-5; Alexis LeBlanc, 20 h. p. Darracq, 2d, time 1:01 4-5.

Five miles, stock cars from $2,751 to $4,000.—Charles Soules, 30 h. p. Pope-Toledo, 1st, time 5:13 3-5; M. Roberts, 40 h. p. Thomas, 2d, time 5:47 4-5; John Caswell, 35-40 Columbia, 3d; E. C. Bald, 35-40 Columbia, 4th.

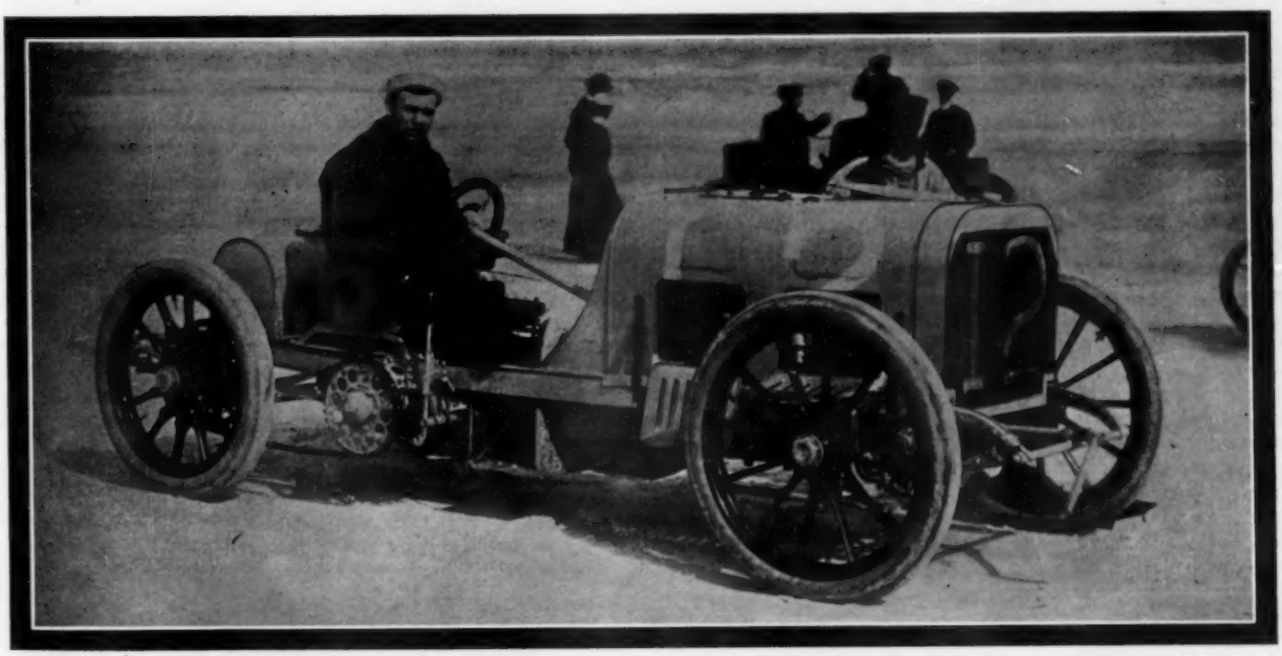
Five miles, for stock cars from $4,001 to $6,000.—Charles Soules, 30 h. p. Pope-Toledo, 1st, time 5:17 3-5; Alexis LeBlanc, 20 h. p. Darracq, 2d; Soules won by one mile.

Five-mile time trial—Arthur McDonald, Hiram Percy Maxim in 18 h. p. Columbia, time 7:18 1-5 (handicap 1:47); Charles Soules (scratch), 2d, time 7:28 4-5; John Caswell, 35 h. p. Columbia, 3d.

Five-mile time trial.—Arthur McDonald, of London, England, in 90 h. p. Napier, time 3:17. Best previous record, 3:31 1-5.

FRANK CROKER'S SIMPLEX CAR IN THE SURF AS IT LAY IMMEDIATELY AFTER THE FATAL ACCIDENT.

PHOTOGRAPH OF THE WRECKED CAR AFTER IT WAS RIGHTED ON THE BEACH AT ORMOND, FLORIDA.



THE LATE FRANK H. CROKER, OF NEW YORK, AT THE WHEEL OF HIS RACING CAR ON THE FLORIDA BEACH.

made by W. K. Vanderbilt, Jr., at Ormond-Daytona beach, January 27, 1904.

Ten miles, stock cars, $2,751 to $4,000.—Won by Charles Soules in 30 h. p. Pope-Toledo, time 10:35 3-5; John Caswell, 35-40 h. p. Columbia, 2d; M. Roberts, 40 h. p. Thomas, 3d.

Ten-mile time trial.—M. G. Bernin, driving W. Gould Brokaw's 60 h. p. Renault, time 7:42.

Ten miles, for stock cars $1,001 to $1,800.—Won by M. J. Budlong, 18 h. p. Columbia, time 14:12 3-5; Charles N. Wheeler, 12 h. p. Bartholomew, 2d.

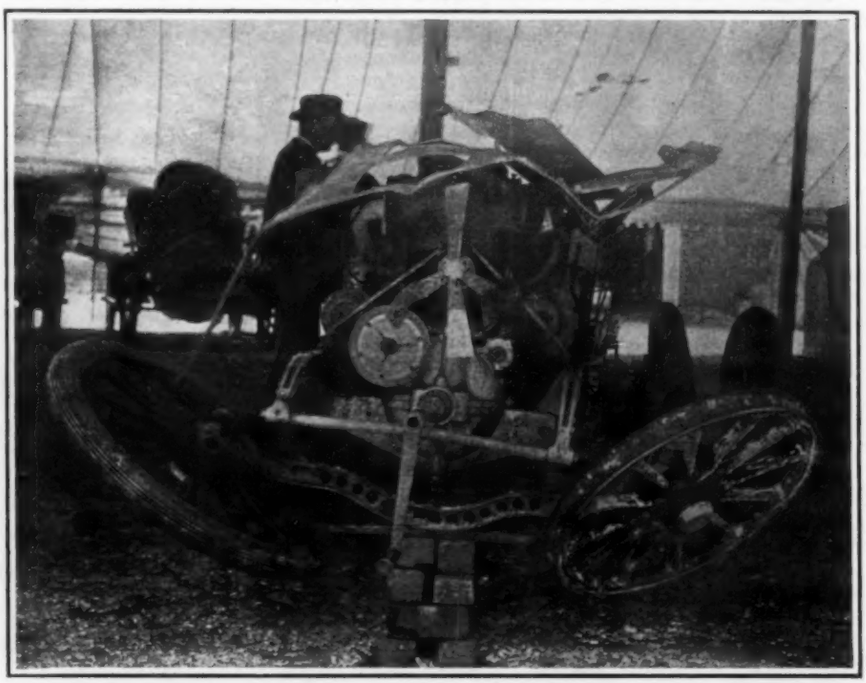
Five-mile time trial.—Guy Vaughn, 40 h. p. Decauville, time 4:32 2-5; Hiram Percy Maxim, 18 h. p. Columbia, time 7:02; M. B. Aultman, 6 h. p. Pope-Tribune, time 11:39 1-5.

Before the Races.

The tremendous speeds attained by the racing cars in their tuning-up spins on the Ormond-Daytona beach speedway, preparatory to the actual races, have been so startling and yet so regularly repeated, that expectations have been raised to a high pitch, and every one has been looking for the establishment of a long list of new records. Every one who is known to the automobile world seems to be at the Beach; a list of the visitors would read like a roster of the most prominent automobilists, automobile manufacturers, dealers and chauffeurs of the country. Hotels are crowded and transportation facilities are taxed to handle the people. Automobiles, motorcycles, bicycles and every imaginable device for transporting humanity are seen in swarms on the sands; but the race course itself is usually left clear for the flyers.

The one untoward event so far has been the death of Frank Croker, whose untimely end has elicited expressions of the deepest regret from all who knew him. Croker, accompanied by his chauffeur, was driving his 75-horsepower Simplex racing car along the beach on Saturday afternoon with the ocean on his right-hand side, at a tremendous rate of speed, estimated by witnesses at about 90 miles an hour, when the accident occurred. A motorcyclist, Newton F. Stanley, a nephew of the manufacturer of the Stanley steam runabout, was running in the same direction, quite close to the water's edge; dodging a wet spot or an in-coming wave, he turned inland directly in front of the flying car. Instantly Croker swerved in an endeavor to clear the motorcycle, but succeeded only partially. Some part of the car, probably the hub of the front wheel, struck the rider's left leg and hurled him and his machine in a heap on the sand. The sharp twist of the automobile was too much for the tires at that terrific speed, however, and the left front one was torn off. In a twinkling the rim had dug into the sand and it is thought wrenched the wheels around sideways, and the ponderous machine turned completely over end for end two or three times, throwing out first the chauffeur, Raoul, and an instant later Croker, and finally settled down in the water, an absolute wreck, with wheels in air.

Raoul was killed instantly, but Croker, though unconscious, was living when picked up and was at once taken to his apartments, where Dr. J. Wilson Parks, of Boston, and Dr. Miller, of Ormond, assisted by other local physicians, lost no time in doing everything that medical science could suggest for the injured man. An examination showed that three ribs were broken; at least one of them punctured the lungs and caused internal hemorrhage; the left leg was fractured in two places; the right arm and left elbow were badly smashed; the right thumb was also fractured; the right ear lacerated; the head badly bruised and the body cut in many places.



FRONT VIEW OF CROKER'S WRECKED RACER UNDER THE SHELTER OF A TENT

Notwithstanding his terrible condition, the young man recovered consciousness shortly after being taken to his rooms, and was strong enough to object to the administration of anesthetics on account of extreme nervousness. After a short delay, however, ether was given and the setting of the broken bones proceeded. This and the dressing of the wounds was completed satisfactorily, and it was at first thought that Croker's robust constitution would pull him through; word was sent to his friends that he was doing well, and every one was greatly relieved. The terrible nervous shock, however, in addition to probable internal injuries, proved too much, and the end came shortly after 6 o'clock on Sunday morning. Croker was conscious almost to the last, but seemed to have no idea his end was at hand. Telegrams were immediately sent to Richard Croker, the automobilist's father, who was in England; to his mother in North Carolina and to his brother, Richard, Jr., in New York city. The body was sent to New York.

The body of Raoul, the chauffeur, was also sent to New York, where his family resides, on the same train which carried the remains of his young employer. A subscription for the benefit of the Raoul family has been started, and it is expected that a considerable sum will be raised. The chauffeur leaves a widow and four children.

Stanley, the motorcyclist who was the unwitting cause of the disaster, sustained a double fracture of the left leg which will confine him for at least six weeks to the St. Augustine hospital, where he was conveyed after the accident. The narrowness of his escape from a worse fate is shown by the fact that the left pedal of his machine was torn off, but the motorcycle was otherwise uninjured.

Automobilists who were entered for the races were thrown into a state of intense nervousness for a time, and Walter Christie declared his intention of leaving the handling of his car to his chauffeur. Most of the automobilists recovered their equanimity, however, and preparatory runs were resumed. President Steck, of the Florida East Coast Automobile Association, stated emphatically that the course would be kept clear during the races, in order to avoid any possibility of further accidents of a similar nature.

An attempt is being made in London, England, to form a club of steam car users. As there are many such cars in use good results are expected to follow these efforts.

ANALYTIC STUDIES OF THE GARDEN SHOW.

Trade Developments Following Public Appreciation—Growth of the Air-Cooled System—Progress in Body Making—Tendencies in Lubrication, Ignition and Radiation—Demonstration Methods.

NOTABLE as was the Garden Show for the high character of design and workmanship displayed in the completed cars and chassis in a wide range of choice in power, speed capacity, service and price, it was even more momentous in its revelation of the attitude of the public toward the now perfected automobile. Not only was the attendance larger than at any previous show, of itself denoting a greatly increased interest, but the composition of the crowds had undergone a radical change. The idle sightseers and curiosity seekers of past shows were either absent or lost in the throng of eager and well informed automobile enthusiasts, who surged through the narrow aisles and crowded the exhibition booths. It was the unanimous testimony of the leading and oldest exhibitors that never before had there been such a large proportion of intending purchasers among the visitors and never before had they been so well informed as a whole.

Chassis Attracted Crowds.

The crowds were always greatest where the exposed chassis or working parts of a car were displayed and in these cases the factory expert was always the most overworked man in the booth. Another feature of the attendance was the presence of a very large number of persons of obviously moderate means, who were yet as obviously intending purchasers and who crowded the spaces devoted to the exhibition of the moderate priced cars, showing the spread of the automobiling idea among the largest purchasing class of the country.

Many Individual Buyers.

A feature of the show which was remarked upon by makers of all classes was the very large number of individual purchasers, not only of the higher priced cars which are necessarily sold in that manner to a large extent, but even of the more moderate priced vehicles. Many of these purchasers came from a considerable distance out of town and wherever possible agents from their locality in attendance at the show were detailed to wait upon them, numerous sales being made in this manner.

Business for Everybody.

With such conditions as these existing it is not to be wondered that the business done at the show was unprecedented and not only far in excess of that ever done at any previous exhibition, but in many cases was greater than at all previous shows put together. Neither was it confined to any class or grade of exhibitors. Makers of gasoline, steam or electric cars, great or small, licensed or unlicensed, old established or new comers in the field, all reported most satisfactory business.

So unexpectedly large was the demand for some of the most popular makes, particularly of the lower priced cars, that it was said that there is a prospect of an actual shortage of certain makes by the time the coming season is well under way. Other makers denied the possibility of such a state of affairs and said that they were prepared to increase their output to almost any desired extent.

Unlicensed Machines Popular.

Despite the campaign of education pursued by the licensed makers' association during the past year or so, there was no indication manifested on the part of the public to avoid the unlicensed makers' cars. On the contrary, it was claimed by some of the unlicensed makers that the sympathy of the public distinctly turned in their favor and the very large business done by the Ford and Rambler cars, for example, would seem to bear this out, at least in part. Nor were the independent makers dismayed by the prospect of being shut out of the New York show next year. The opinion was generally expressed that such action by the licensed makers would react upon them by forcing the outside makers to combine for self-protection and for the holding of an opposition show if necessary.

Demonstration Cars Kept Busy.

So great was the rush of intending purchasers that although most of the makers had from three to seven demonstrating cars in service outside of the Garden, the number was totally insufficient to accommodate the demand for demonstrations. As many as twenty-five or thirty persons were sometimes seen awaiting their turn to ride in some popular make of car, and scenes of great confusion sometimes resulted.

Considerable Trade in Sundries

The manufacturers of tires, parts, accessories, supplies and sundries also participated in the outpouring of business. The maker whose unexpected rush of orders caused him to decide to double his estimated output for the season, necessarily doubled his orders for parts and accessories, and so on all up and down the line. Interviews with a number of the representative exhibitors follow:

Autocar.—"Better than we expected," said L. C. Clark, of the Autocar Co., "and very satisfactory. I noticed a much larger percentage of buyers among the visitors this year."

Cadillac.—"We have sold more than 3,400 single cylinder cars and over 200 four-cylinder machines," said W. E. Metzger, of the Cadillac Automobile Co., "and have over 30 agencies to hear from yet at the Chicago show. We will put out over 4,000 of the smaller cars and shall increase that number as largely as is necessary, as we have ample facilities now. The business done here was away above our expectations. We also did an unusually large individual business through our various local agents, who were in attendance here. Our Stamford, Conn., agent sold five four-cylinder cars here and our New York agents sold fourteen."

Cameron.—"We did a good business. Our New York and Brooklyn agent sold 22 cars during the show."

Corbin.—"We are well satisfied with the results of our first exhibition," said J. S. Bretz, general manager of the Corbin Motor Vehicle Corporation. "The agencies arranged will take care of all our estimated output, which probably will have to be materially increased."

Elmore.—"We did well," said R. G. Megargel, of the Elmore Mfg. Co., "twice as well as last year, largely due to the remarkable trip made by the Elmore *Pathfinder* last summer. Our sales here were entirely through agents."

Ford.—"We are very well pleased with the business we have done," said James Couzens, of the Ford Motor Co., "and despite our increased facilities and the large number of parts already on hand, it looks as if we might be over-sold before the season opens, especially in our new four-cylinder car, which has proved very popular. Our business here has been entirely agency business, all local sales being handled by our local agent, John Wanamaker."

Franklin.—"Have sold our entire output," said C. A. Benjamin, of the H. H. Franklin Mfg. Co., "as far as agency business is concerned, and our local agents who were here from all over the country did a large business in sales to individual purchasers, who were much more numerous than ever before. Our Boston agent sold twenty cars in one day here and our New York agents did even better than that, one of the New York salesmen selling two cars in an hour."

Grout.—"Our sales have been 100 per cent. more than at last year's show," said C. B. Grout, of the Grout Bros. Automobile Co., "and we expect to do even better at the Boston show, where we sold 75 cars last year. As regards the comparative

merit of steam and gasoline cars, we have a fully equipped factory at Orange, Mass., where we could just as well build gasoline cars if we did not think the steamers better. Steam is growing slowly but surely in favor, and it is being greatly helped along by the poor work of some of the cheap gasoline cars now being made. Over 30 per cent. of the automobiles registered in Massachusetts are steam cars."

Locomobile.—"Absolutely unprecedented is the way to describe the business we have done," said J. A. Kingman, of the Locomobile Co. of America. "We sold eight of our 40-45-horsepower cars at $7,500 to $8,000 each and over thirty of the 30-35-horsepower cars at $5,000. We had more than a dozen orders in the first few days, where last year at the corresponding time we had none at all. These, of course, are sales to individuals, and the number of well informed individual purchasers was remarkable. Of course the fine weather of the week helped to bring them, especially from a distance. We also arranged for a number of excellent agencies."

Lozier.—"We are well satisfied," said C. A. Emise, of the Lozier Motor Co. "We can only turn out twenty-five cars of this model for early delivery, and the agencies already established will take care of them. We shall, however, have a full line to be ready later in the season, upon which we are already working. Our automobile business has been held back very much because we have been so busy making motor boats."

Maxwell-Briscoe.—"We are more than satisfied," said Col. A. C. Pardee, of the Maxwell-Briscoe Motor Co. "Our retail sales were very heavy, away beyond our expectations, and we did a good agency business. We shall build 2,000 cars this year, and could sell many more than that number."

National.—"We are highly pleased," said A. C. Newby, of the National Motor Vehicle Co. "We have done more business here than at all the previous shows together. There has also been a large proportion of individual sales. Our New York, Boston, Providence and other agents who were here also did well in this respect."

Northern.—"If all were so well pleased as we are, there will be no complaints," said W. T. Taylor, of the Northern Mfg. Co. "Most of our business has been with agents, but we have also made a number of individual sales through local agents in attendance here."

Oldsmobile.—R. D. Chapin, of the Olds Motor Works, expressed himself as follows: "Our business at last year's show was good, but this year's has been very much better, due largely, I think, to the bringing out of our new car, which has taken wonderfully well. Our agents have largely increased their orders and our Lansing factory has not only been increased 25 per cent. in capacity, but is now running day and night. We anticipate a very large business this year."

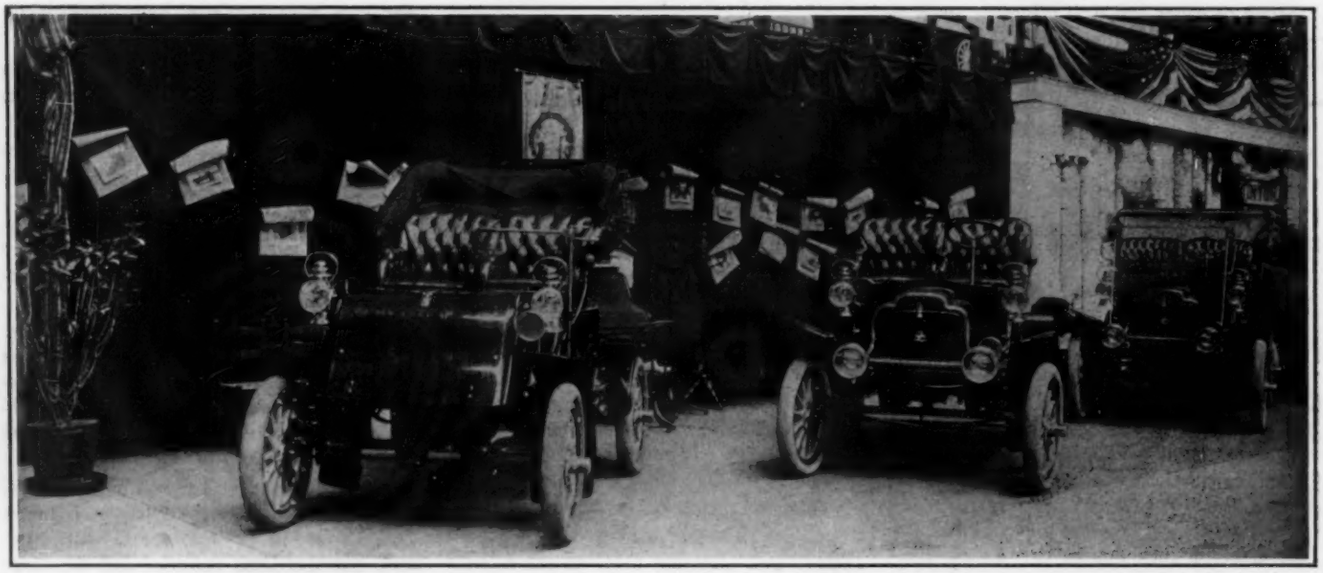
Orient.—"It was the most successful show we ever entered," said E. P. Chalpant, Eastern sales manager for the Waltham Mfg. Co. "We sold three-quarters of our output for the season here and established about twenty-five agencies, including a number of foreign ones, in Great Britain, Holland, Germany, Austria and Brazil.

Packard.—"Our estimated factory output for the year has already been disposed of and probably will have to be largely increased," said W. R. Densmore, of the Packard Motor Car Co. "Our polished chassis attracted much attention and it was surprising how well informed on matters of construction many of the visitors who inspected it seemed to be. The advance in technical knowledge on the part of the public is remarkable."

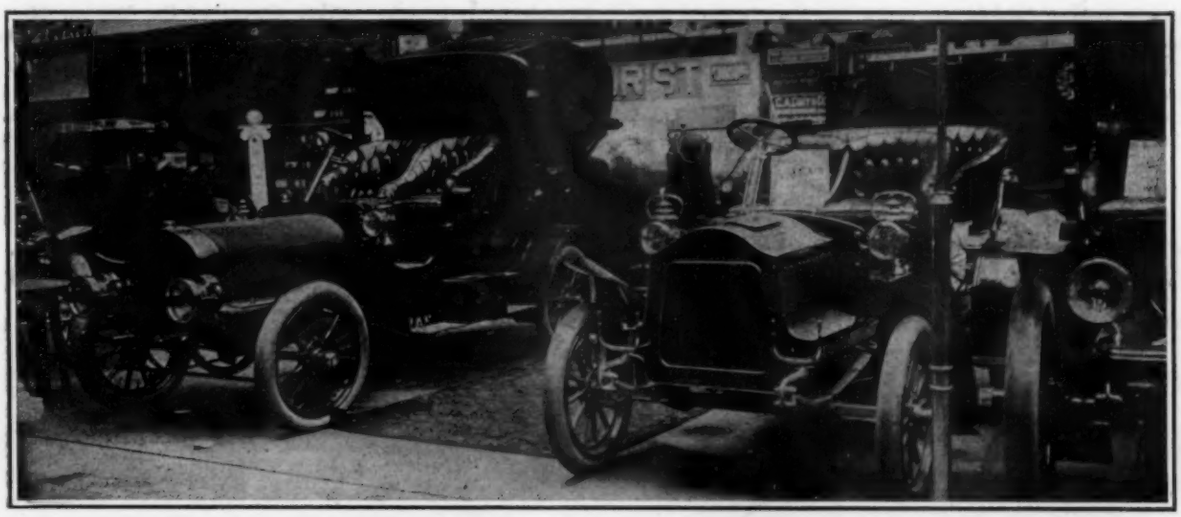
Panhard and Levassor.—"We have sold about thirty-five cars, mostly in the chassis, ranging in price from $6,900 up to $11,000," said A. de Magnin, of the American branch of Panhard and Levassor. "This is away ahead of last year. A number of our cars have also been sold by the Palais de l'Automobile and Smith & Mabley."

Peerless.—"We have done an unprecedented business," said E. H. Parkhurst, of the Peerless Motor Car Co., "larger than at New York, Chicago and Boston last year, in actual sales to individual purchasers by our agents here. The general increase in individual sales of a high class nature is particularly noticeable. We sold two of our 60-horsepower cars without showing one. We were badly handicapped by the destruction of our exhibit at Buffalo on Sunday morning, and our first sale was that of a 24-horsepower car on Tuesday evening."

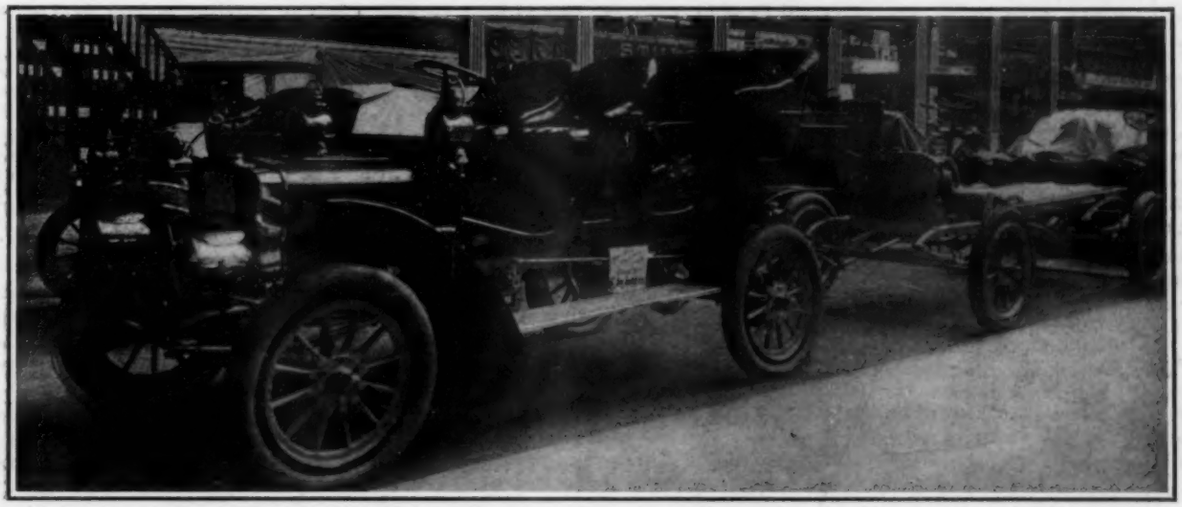
Pierce.—"We are more than pleased and really are surprised at the amount of business done, not only by ourselves, but by others," said Mr. Nickerson, of the Geo. N. Pierce Co. "We have sold even our exhibition and demonstrating cars and cannot go to the Philadelphia show next week in consequence, while I have had to telegraph to the factory to prepare a new exhibit for Chicago. These are all sales to individual purchasers who came in here and wanted immediate delivery of a car. That Cape top touring car, for example, is sold to a New York man who wants it at 8 o'clock Sunday morning, and I suppose he will have to have it. The limousine body car is sold, too, but I made the purchaser, who is a member of a Philadelphia brewing firm, agree to wait until we have exhibited it at



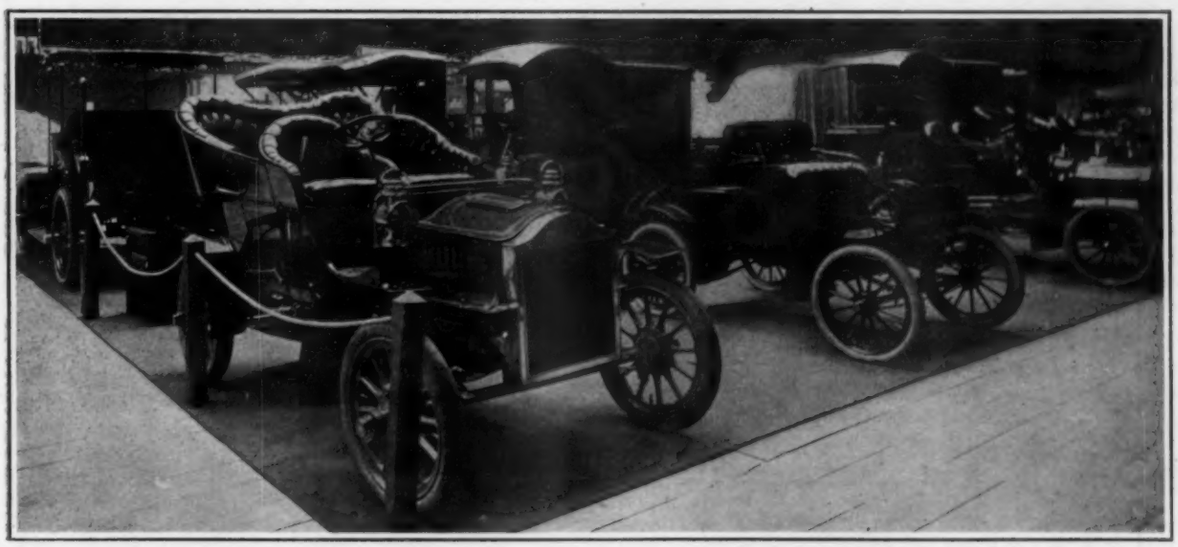
KNOX STAND AT MADISON SQUARE GARDEN SHOW—FAMILIAR TYPE TO THE LEFT, CARS ON RIGHT HAVE FRONT HOODS AND WHEEL STEER WITH STANDARD HORIZONTAL AIR-COOLED MOTORS.



YALE OPEN AND SEMI-ENCLOSED CARS EXHIBITED BY THE KIRK MANUFACTURING CO. AT THE GARDEN SHOW



NORTHERN EXHIBIT SHOWING CHASSIS AND THE NEW HORIZONTAL MOTOR-IN-FRONT SIDE ENTRANCE OPEN CAR.



OLDS COMPLETE LINE—THE CAR IN THE LEFT FOREGROUND IS THE NEW TWENTY HORSEPOWER TOURING CAR.

Chicago, as it was finished especially for the shows, and though we have 200 more under way, they will not be ready for a couple of months yet. But the business certainly was remarkable. I think there was more business done on the opening night this year, crowded as it was, than on any night last year. Our output for the season is practically disposed of now."

Pope.—"We have done the largest business we have ever done at any show," declared W. C. Walker, of the Pope Mfg. Co., "and which exceeded our highest expectations. The largest increase was in agency business, though there was a notable increase in individual purchasers. It was also surprising how well informed our visitors were, especially in technical matters."

Queen.—"We sold 537 machines up to Saturday evening," said Mr. Blomstrom, of the C. H. Blomstrom Automobile Co., which exhibited the Queen car for the first time in the East, "so that you may judge that we are well pleased. Last year we oversold our output, and it looks as if it would be the same this year."

Rambler.—"Our agency business here was much greater than last year," said Mr. Smith, of T. B. Jeffery & Co., "though, as a matter of fact, our estimated output was practically sold before the show began. We are turning out twelve cars a day now and have had to lease a building in Kenosha to store them in. By February we shall turn them out at the rate of twenty a day. We did a very good business in the sale of cars to individual purchasers also through our agents, who booked 50 per cent. more individual orders than last year."

Reo.—"Our sales were greater than expected, and the first batch of cars which we will have ready are already disposed of."

Royal.—J. W. McCrea, sales manager of the Royal Motor Car Co., said: "We have done a remarkable business here, and even though we have decided to double our estimated output, the increase has all been taken up by our agents. We could sell more if we could make them."

Stearns.—Roy F. York, general sales manager of the F. B. Stearns Co., said: "We are sold out up to April 15. We took a large number of individual orders here at the show, including that of Henry M. Flagler, and arranged for the opening of a New York branch. The interest and the technical knowledge displayed by the visitors generally was wonderful."

Stevens-Duryea.—"We have done 75 per cent. more business than last year," said C. C. Hildebrand, of the J. C. Stevens Arms and Tool Co., "primarily on account of our new four-cylinder car. These are sales to individual buyers through our local agents who are here. Our Boston man sold twenty cars during the show; our New York agent ten. In fact, every one did well. I have never seen so many eager buyers or so much enthusiasm. Everybody was right down to business. One of our agents sold four of the new cars to the members of one Boston family, who already have eight of our runabouts, making twelve of our cars owned in that one family."

Thomas.—E. R. Thomas, of the E. R. Thomas Motor Co., said: "We have averaged in individual sales by our agents at our booth ten cars a day, and as our cheapest car is our forty-horsepower at $3,000, this means a business of about $250,000 for the week. As regards agency business, our output is practically arranged for. The business of the show has been remarkable, particularly in the number of individual purchasers."

White.—R. J. Schmunck, of the White Sewing Machine Co., said: "We have sold more cars this year than at all former shows together, and the business has been far above our expectations. We are making five cars a day now, but must increase it to eight a day in order to keep up with the demand. These sales are to individuals and not to agents. I have noticed more than ever before the large proportion of individual buyers, many of them coming from a great distance, and they are much better informed than ever before."

Winton.—"Our business at the show has exceeded our highest expectations," said Percy Owen, of the Winton Motor Carriage Co. "We have 1,200 or 1,300 cars of our new model ready to deliver, and our factory is running overtime, but it is a question whether we will be able to supply the demand. We have done a particularly good business in sales to individuals, through our local agents, and I have noticed a large increase in the proportion of individual buyers."

Hayden Eames.—"We did all the business we could wish for," said L. C. Caswell, of Hayden Eames, of Cleveland, representing the Federal Mfg. Co., Imperial Wheel Co., A. O. Smith, the Westinghouse Electrical Mfg. Co. and others. "A number of the largest makers, including the Peerless Motor Car Co., the Studebaker Automobile Co. and the Royal Motor Car Co. doubled their orders for parts since the show opened, and many others largely increased theirs. There was also an unexpectedly large amount of new business. For example, a representative of a prominent firm of carriage makers in Los Angeles, Cal., who are about to begin the making of automobiles, gave us an order for 500 complete chassis for a $3,500 car which they will turn out."

Charles E. Miller, E. J. Willis Co., Post & Lester and other large jobbers of parts, supplies or accessories, all reported a largely increased business over that of last year.

Air-Cooled Cars in the Garden.

AIR-COOLED motors were numerous at the Madison Square Garden automobile show. Not only were there more cars exhibited with this type of motor than ever before, but the rated horsepower was greater, the cars themselves larger and heavier, and last, but not least, the advice given to purchasers concerning the proper handling of an air-cooled motor lacked the somewhat elaborate instructions for keeping the motor from over-heating that were at one time considered of much importance. While the runabout with air-cooled motor was well represented, there was no lack of big, able touring cars with motors rated at from 16 to 30-horsepower, with four vertical cylinders. Of the eleven different exhibitors of air-cooled cars, six showed cars with 4-cylinder motors, the lowest power rating being 14-16-horsepower and the highest 30-horsepower; the average figures out at 20.5-horsepower. Motors with one, two and three cylinders were also shown; but interest naturally centers in the four-cylinder machines, whose manufacturers do not hesitate to invite comparison with water-cooled cars.

Several points of interest develop in making an examination of the larger machines, not the least noticeable being the fact that in several instances one maker seems to get excellent results using a system that some other manufacturer has failed to get anything out of. This seems to be particularly true with regard to the arrangement of the radiating surfaces. Every man approached on the subject told of an almost endless series of experiments with various dispositions of flanges, pins, spirals and other devices cast on, brazed on or inserted in the metal of the cylinders. The familiar cast-on flanges, however, seem to hold their own, being seen on five out of the seven cars having more than two cylinders, and on all the single and double cylinder air-cooled motors except in one instance, where single and double cylinder horizontal motors were cooled by pins inserted in the cylinders.

Two four-cylinder motors, however, had their cooling surfaces differently arranged. In one case the cylinder is cast with a polygonal exterior, having fourteen sides, in which grooves are milled. Soft steel combs are inserted in these grooves, with teeth pointing outward, and the metal of the cylinder is hammered or "peined" so as to close up the grooves, causing the combs to be very rigidly held. The teeth are so arranged that there are clear passages between them, from bottom to top, for the air set in motion by fans placed over the cylinder heads, one fan for each pair of cylinders.

Sheet-Metal Jackets Used.

In the second departure from the cast flange design, the cylinders on which a small number of very short pins are cast, are covered with sheet metal jackets, open at the bottom, the upper ends of which are in communication with an air duct into which air is forced by a centrifugal blower mounted on the front end of the motor shaft. It is believed, however, by the manufacturers of this motor that the pins are entirely superfluous, and that the cylinders might just as well be cast plain, as they afford little additional radiating surface.

There is a general inclination to place cast flanges parallel with the currents of cooling air, so none will be sheltered. An excellent design was shown with horizontal flanges on the cylinders and the valve chambers, which were placed in the usual position on the sides of the separate heads and vertical ribs on the tops of the cylinder heads, running fore-and-aft so as to give a clear passage to the draught. As the valve chambers are not placed on the cylinder heads, these are left unobstructed, and the air has a clear passage between the flanges.

Valves on Top of Cylinders.

It is the usual practice, however, to place the valves on top of the cylinders—in fact, the motor mentioned is the only one of the four-cylinder machines to carry its valve chambers off the cylinder heads. Of the six four-cylinder motors exhibited five have their valves opening more or less directly through the cylinder heads, though in one case it is only the exhaust valve that is so placed, the inlet valve occupying a position at the side of the cylinder and the exhaust valve being very large, the idea being to give the exhaust every freedom of exit so as to get rid of as much unconverted heat as possible at once.

An Auxiliary Exhaust.

One manufacturer has adopted the old expedient of an auxiliary exhaust, with apparently good results. Others, when the subject was referred to, were as a rule inclined to believe it a good thing, and no less than three stated their intention of experimenting in that direction; one had already some experimental work in hand. This is particularly interesting in view of the fact that the auxiliary exhaust has been frequently tried and as frequently rejected as making more trouble than it saved. One maker, when asked his opinion as to why the auxiliary exhaust had so often failed, said that he believed it was for the same reason that air-cooled motors on a large scale had usually failed—because of lack of knowledge on the subject. Ports uncovered by the piston have been in use on two-cycle motors for years, he said, and there was apparently no reason why, with the increased knowledge of explosion motors now available, they should not be successfully applied to four-cycle motors as auxiliary exhaust ports.

Matter of Compression.

Of great importance to, and directly connected with, the cooling of an air-cooled motor is the matter of compression. Obviously the amount of heat liberated by the explosion of a charge of gas compressed to 80 or 90 pounds would be more than any system of radiating surfaces at present devised could dispose of. Therefore all the air-cooled motors work with a comparatively low compression, the highest being that of the motor cooled by forced draught through jackets, already referred to. In this instance the compression is said to be 70 pounds to the square inch. All the other four-cylinder motors compress their charges to from 40 to 45 pounds, this being found the best figure under the circumstances. These are all fast-running motors.

For racing purposes, where the car is to be run almost constantly at high speed, the compression is sometimes raised considerably, thereby increasing the efficiency of the motor; but for all-round work anything much higher than 45 pounds is found to cause practical difficulties in cooling. The case is somewhat different with slow running motors, where there is a longer interval between explosions for cooling. A horizontal motor with pin-cooled cylinders, single or double opposed, compresses to 60 pounds and the designers have had no difficulty in keeping it cool.

Mechanically Operated Valves.

Mechanically operated valves are practically exclusively used in the larger sizes of air-cooled motors. In almost every case the in-coming charge is made to fan the exhaust valve to assist in keeping its temperature down; and the spark plug is usually placed where it will get the benefit of the in-rush of gas.

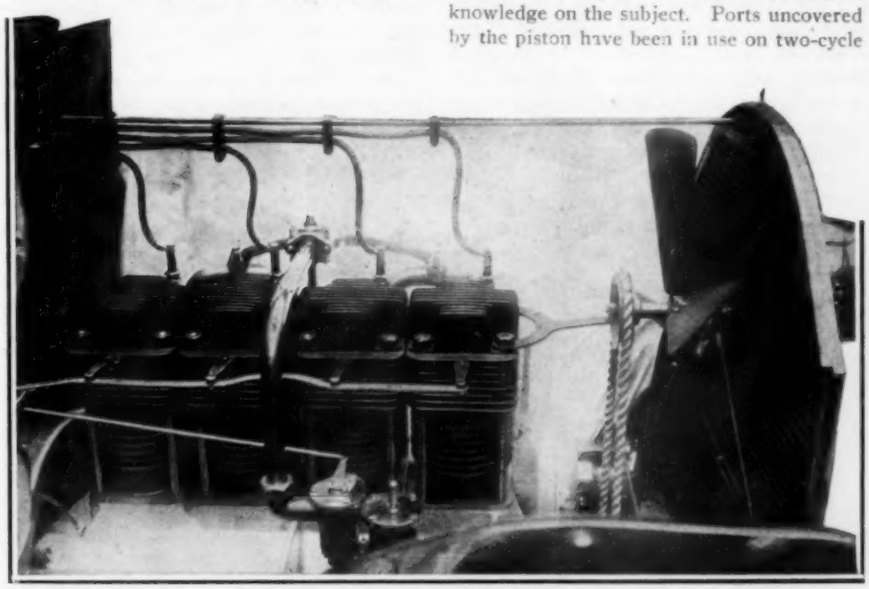
In two motors the valves are placed in the heads of the cylinders with their stems projecting horizontally, the valves opening inward and toward each other into a narrow chamber formed in an extension of the cylinder head. This is intended to keep the valves away from the principal source of heat to some extent, to surround the chambers with cold air, and to bring the cold in-coming charge in direct contact with the hot exhaust valve. The exhaust is also given a very free passage through the top of the cylinder.

Cylinder heads are, as a rule, cast integral with the cylinders, this arrangement being

TABLE SHOWING CHARACTERISTICS OF AIR COOLED MOTORS EXHIBITED AT THE MADISON SQUARE GARDEN SHOW.

Name of Car.	H.P.	Cylinders.	Bore and Stroke	Compression.	Location and Dia. of valves.		Cooling.
Franklin	30	4 vertical transverse	5 x 5	40	M. O. in head	Both 1 3-8	Cast flanges.
Corbin	24–30	4 vertical fore and aft	4 1-2 x 5 1-2	55	M. O. in head	Both 1 1-2	Inserted combs.
Frayer-Miller	24	4 vertical fore and aft	4 1-16 x 5 1/8	70	M. O. over head*	Both 1 3-4	Forced draught.
Orient	20	4 vertical fore and aft	4 x 4 1-2	40	M. O. on Cyl. sides	Both 1 11-16	Cast flanges.
Premier	16	4 vertical transverse	3 3-4 x 4 1-4	40	M. O. in head	Both 1 1-4	Cast flanges.
Marion	14–16	4 vertical transverse	4 x 4	45	A. O. In. on side Ex. in head	In. 1 1-4; Ex. 2	Cast flanges.
Cameron	12–15	3 vertical fore and aft		55	A. O. over head*	Both 1 3-4	Cast flanges.
Knox	14–16	2 horizontal fore and aft	5 x 7	60	A. O. on Cyl. sides		Inserted pins.
Marsh	10	2 vertical transverse	4 x 4	45	A. O. on Cyl. sides		Cast flanges.
Crestmobile	8	1 vertical fore and aft		45	A. O. on Cyl. sides		Cast flanges.

* Valves set with stems horizontal in a narrow vertical chamber formed in an extension of the cylinder head.



MOTOR OF NEW 20-HORSEPOWER AIR-COOLED MOTOR-IN-FRONT ORIENT CAR.
Cylinders 4 by 4 1-4 inches, with heads and bodies cast separate. Radiating fins set in direction of air currents. Throttle in inlet pipe placed vertically at branches. Rope driven fan. Open grating in front of fan with square holes resembling honeycomb radiator.

preferable to any kind of a joint exposed to constant high temperatures, though where the valves open directly into the heads there is usually quite a large opening when the valve cages are removed.

Cooling of Rear Cylinders.

One manufacturer of a four-cylinder air-cooled motor was asked his experience with regard to the cooling of the cylinders most remote from the single fan, which was located directly in front of the foremost cylinder. This engineer had taken pains to discover which of his cylinders got the hottest in actual use, and was in a position to assert positively that the front cylinder, which was not six inches from the fan, became considerably hotter than any of the others. This he accounted for by the fact that the center of the fan was practically dead, throwing out but little air, while the great volume of the draught from the ends of the blades passed the first cylinder and converged on each side towards the center, so that the three rear cylinders were well cooled, while the foremost cylinder got but little benefit from the fan, except on its head, which was more directly in the path of the current of air.

Two of the four-cylinder motors exhibited used no fans; all the others used from one to three—the car using three having one in front and one over each pair of cylinders.

Methods of Fan Drive.

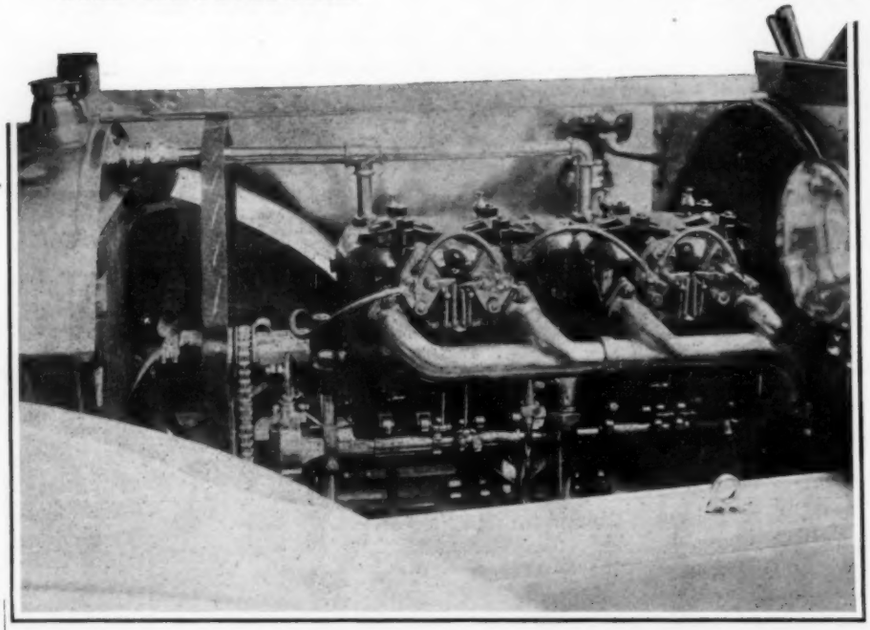
The usual drive is by flat belt or rope; in one case a gear drive is used. The noiselessness of the belt arrangement is a strong point in its favor, and the manufacturers declare that it is the best possible arrangement, all things considered. A number of prospective purchasers, however, and others who were interested seemed to think that a more positive drive would be preferable, and one man went so far as to arrange with the dealer to put on a gear drive for the fan in case he purchased the car.

The old bugbear of lubrication seems to trouble the maker of air-cooled motors but little. Splash lubrication is generally used, and one of the many modern forced feed systems is usually, though not invariably, fitted. It is generally agreed by the builders that as long as a high-grade oil is used no trouble need be expected from this source.

The exhibits of air-cooled cars were centers of interest to automobilists, actual and prospective, and not only were the attendants at the stands kept busy giving information, but the demonstrating cars in the street were kept in action by numerous trial spins.

Steam and Electric Cars.

There was but one representative in the New York show of the once typical American automobile—the steam runabout—that at one time took the center of the Garden and was one of the most popular things on wheels. The small steam car exhibited, the Prescott, remains practically unchanged, though a number of minor changes have been made. The exhibitors stated that notwithstanding the popularity of gasoline as a motive power, steam is sufficiently in demand to keep them busy.



STANDARD 24 H.P. MOTOR, WITH OPEN BASE, EXPOSING CRANKS, VALVE AND IGNITION GEAR.

Of the larger, or touring, type of steam cars, however, there were three exhibits, the White, the Grout and the Lane, all showing in a marked degree the influence of gasoline automobile design—in fact, there is little or nothing in the outward appearance of the modern steam automobile, as seen at the Madison Square Garden, to show that it is not a gasoline car. The condenser, simply a radiator adapted to the requirements of steam, placed in the usual position, completes the resemblance—except in the case of the Grout, where the hood, shaped like a barrel, is closed at the end and has a headlight sunk in the center, giving a decidedly locomotive-like appearance to the machine when viewed head on. This car has already been noted for its locomotive effect.

Boilers of Large Cars.

The boilers of the three large steam cars exhibited represent three methods of steam generation. A flash generator is used by the White; a semi-flash by the Lane, and a plain fire-tube boiler by the Grout.

The White and the Lane use double-cylinder compound engines of 15-horsepower, the engine of the former being placed under the hood in a vertical position, and that of the Lane in an inclined position under the foot-board. A simple double-cylinder engine of 12-horsepower furnishes power for the Grout, and is placed horizontally under the body. The White generator is placed under the front seat of the car, while the Lane boiler is under the hood.

Both compound engines are fitted with "simpling" valves, by the use of which live steam may be turned into low pressure and high pressure cylinders simultaneously, greatly increasing the power in emergencies. Both compound engines exhaust into condensers, while the Grout engine exhausts into a muffler, and thence into the atmosphere. Bodies, frames, running gears, controlling levers, steering gears and, in short, almost everything except the power plant is similar to the corresponding parts of gasoline cars.

The attitude of the general public toward these big steam automobiles was perhaps expressed by an interested, though not technically informed, visitor at the show. "I like that machine," he said, looking at a handsome steam car, "because it seems to be about half-way between a big gasoline car and a little steamer—a sort of happy medium."

Electric Cars on View.

While the electrics show, to a certain extent, the influence of the prevailing body styles set by the gasoline vehicles, they adhere closely to their original forms, as a rule. Some of the electric runabouts shown were fitted with smart little hoods and a few other "gasoline" features; but an electric runabout possesses characteristics which cannot be disguised. Besides, alterations in style mean the addition of parts and the loss, to a certain extent, of the neatness and simplicity characteristic of the small electric vehicle; and this, from the point of view of the manufacturer, as well as of the majority of users, is undesirable. Therefore the little electrics show no material changes, and the same is true of the larger machines—victorias, broughams, coupés and the various other familiar styles, which remain the same year after year. Even the well-known hansom is still shown in almost its original form.

There is a marked absence of novelty in the power outfits also. "We are doing all

that can be done with what we have at our disposal," said one exhibitor. "Of course we are getting everything down a little finer every year, and little things are constantly being made better. I can't see very well how much improvement can be made in motors; and batteries, in their present form, I think, have pretty nearly reached their limit. I guess we can look for big changes when we get a battery that's a great deal better than what we have now—and no sooner."

Like the true flying machine, that is apparently very much in the future, and meanwhile the private electric car is growing in popular favor, especially in the large cities.

Car Bodies at the Garden Show.

ON the surface the show of 1905 appeals not only to the average spectator, but to the practical motorist, as well as being essentially an exhibition of bodies. There was more that is both good and new in the mechanical line than one could study thoroughly in a week, and this material was most invitingly displayed in the form of the bare chassis with machinery in motion and often cut in sections to show every part, but at the same time the most conspicuous feature was the body display. Where the closed and covered bodies have been the exception in previous years, they were here the rule; and both as an indication of the prevailing tendency in automobiling and of the advance thus far made in a new line the collection was well worthy of special study.

What is perhaps the most important lesson of the new exhibit, the decline of the speed craze, does not appear on the surface, but it follows as a matter of course from the development of the closed car. The large folding tops now so generally used are of necessity more or less of a hindrance to high speeds, the costly and luxuriously appointed limousine bodies indicate in their windage and weight a limit of speed not materially greater than the highest fixed by the law, while there is a question as to the life of such bodies if continually driven at excessive speeds over roads not of the best. The questions and comments of would-be purchasers were this year directed primarily to such matters as the seating capacity, foot-room, convenience of entrance and easy riding; all of these taking precedence of the question of the maximum limit of speed.

Changes in Body Types.

This later development of the closed car indicates a better understanding of the possibilities of the automobile, and the accession of a new class of users who demand in it the same convenience and comfort to which they have always been accustomed in the older types of road and rail vehicles. That this demand is both fair and practical is fully proven by the present exhibit. In almost every country the range of climate throughout the year makes a certain amount of protection necessary in one season or another, and even in such continued good weather as is the rule in an American summer the utility of the car is enormously increased by at least a cover and curtains.

In type of body, in dimensions, proportions and general form, a very great change has taken place from last year; the tonneau body with rear entrance has practically disappeared, and its particular place has been taken by the double-phaeton or surrey type with side entrance, usually double; while the range of choice has been extended infinitely by the introduction of the landaulet and limousine bodies on almost every well-known make of chassis. This change is by no means confined to the largest and most costly cars; some of the less pretentious have well designed bodies of new form, with good doors and very efficient protection in the form of a folding top with curtains.

With the sudden expansion of wheel-base there has been a bold reaching out for something very much better than the tonneau. In the "tub" form, from which the tonneau derived its name, the length was no greater than the breadth, and the passengers were cooped up in this contracted box. Not only in the small runabout with tonneau stuck on, but in many large and costly cars, the size and position of the rear part of the body made riding a constant discomfort. The lengthening of the body has done much to remedy all this, giving ample room for feet and limbs, the longer wheel-base and the improved suspension add their share of easy motion, while the position of the main seat with regard to the rear axle does its part.

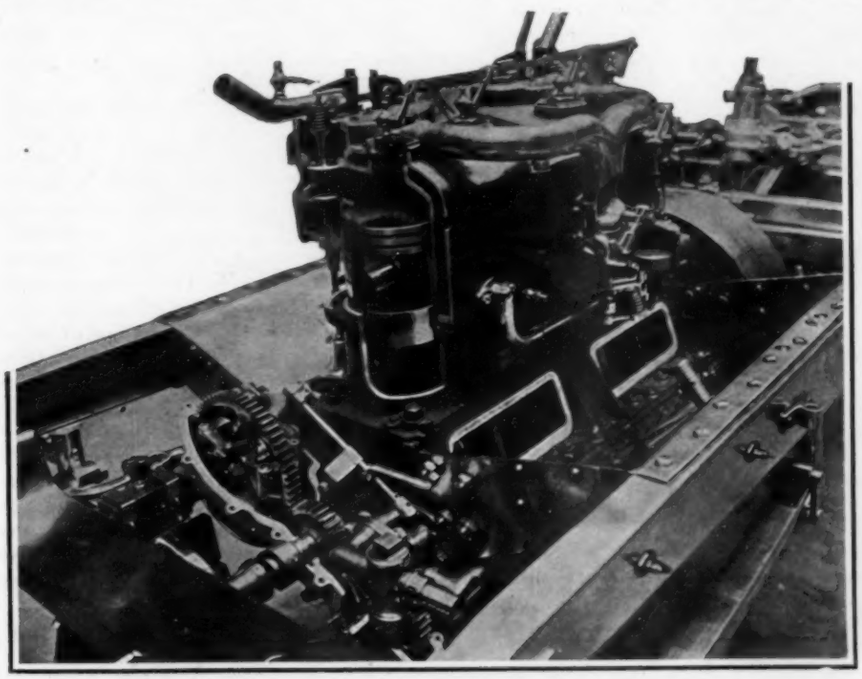
Some Failures and Their Causes.

Taken all together, the new cars show a very marked improvement; but at the same time there are some that in this first attempt have fallen short of the possibilities. These are not inclusive of smaller and low priced cars, but some expensive cars with roomy bodies and long wheel-bases are spoiled by narrow doors, inconveniently located, and opening only part way on account of the interference of the fenders or of projections of the seats.

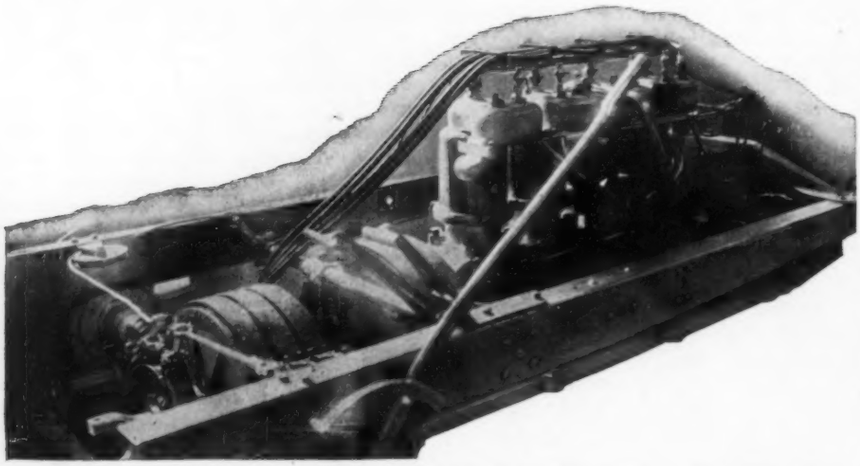
It is obvious that length of wheel-base is the first element in producing a comfortable body with side entrance; but it is equally true that a long wheel-base alone will not attain the desired end if other considerations be neglected. Given a reasonable wheel-base for the size and style of car, there still are many problems involved in the positions of motor, dash, sprockets and fenders, and the proportioning of the body and placing of the doors. As is the case with a yacht, a locomotive, or any other complicated structure, the design as a whole must be considered by one person who understands thoroughly the relative value of each element, and who, without external interference, makes a judicious compromise of conflicting interests.

Such body defects as are noticeable, and these quite apart from the question of wheel-base, are due to two causes: either the chassis is designed and built without due regard to the body, or old bodies built with the rear-door entrance and tonneau proportions have been made over the side-entrance pattern.

Some cars were exhibited in which the doorways are narrow, placed too far back over the rear wheel, or overhung by the



FRONT END OF 35-40 H.P. COLUMBIA CHASSIS WITH SECTIONED MOTOR.



MOTOR AND PLANETARY GEAR OF CADILLAC 30-35 H.P. ON VIEW AT THE GARDEN.
Valves all on one side. Heads and valve chambers cast separate. Copper water jackets. Cylinders, 4 3-8 by 5 in.

swell of the front seat; while as to the doors themselves they do not open fully through striking a fender or a front seat. Access to them also is made difficult by the position of the fender, the height of the step or runningboard, and in particular by the awkward size and position of the sprocket step necessary to clear the chain. On the other hand, there are many cars of only moderate size in which there is a wide doorway well placed between front and rear seat, the door itself swinging entirely out of the way, while the heights of the step or steps are properly divided.

It all comes back to the old proposition that time apparently wasted in designing is saved over and over in building, and that paper spoiled in drawing costs less than wood spoiled in building.

Changes in Popular Taste.

There is a marked promise of better things in the passing of the *Roi des Belges* body, and the obvious tendency toward simpler forms. There are in the present show, as everywhere on the road, examples of the extreme to which this fad has been forced, ungraceful, and difficult of construction except in aluminum. With the new seats, ample in both dimensions and supplemented by foot-room which admits of an easy semi-reclining position, there is no further necessity for the extreme roll of the upper back; and the simpler form dictated alike by structural considerations and the canons of good taste seems likely to have the indorsement of fashion as well.

That, even if not positively in bad taste, this over-ornate style is in no way essential to grace and artistic design, is amply proven by many of the new cars. While all approach to stiffness and angularity of form is avoided by easily curved outlines, and although both backs and side panels are curved, this bending is all in one plane and the many hemispherical projections of the extreme *Roi des Belges* type are entirely absent. Some very fine cars were on view in which the ease of entrance was sacrificed to a few trivial and incidental curves worked into the door or the side for effect, but really adding nothing to the general appearance.

With Hinged Front Seats.

While there are still a few new cars with swiveling or hinged front seats to give access to the rear, it is probable that this type, merely a primitive step in the evolution from the tonneau to the phaeton, is now extinct. Another apparently transitory style is the single side door. If it is possible to put a fairly good door on one side of a car, it should be equally possible to put a similar one on the other side; and yet a few cars were shown with the single door.

Aluminum or Wooden Construction.

While aluminum is still used by choice by many, there seems to be dissatisfaction with this metal, and a strong tendency toward the use of wood, a line in which American makers were pre-eminent in carriage building. It is claimed that the latest wooden bodies show a material gain in weight over those of aluminum, and are also less liable to damage and more easily repaired; while there is practically no deterioration from age. At the present time wood is used with good success, even in the extreme styles of the *Roi des Belges*. In the new Haynes-Apperson phaeton with boldly swelled sides and back, the body is built up of staves, glued together and additionally secured with screws, the thickness being such as to admit of the carving out of the curved back, the inside being afterward shaped to correspond, so that the ultimate thickness is only about one inch.

Another example of special wood construction is seen in the Welch phaeton with movable landaulet top, the sides and back being bent in a single thickness of one-inch board glued up to the width, the swell at the top being formed by a piece several inches thick bent and glued to the front piece, from which the curve is shaped. There is also some good bending on the doors of this car.

A Leon Bollée chassis, with 24-horsepower motor, is shown with a wooden landaulet body by A. T. Demarest & Son, of the usual American carriage construction, exhibited in the natural wood just ready for the painter. One peculiarity of this body is the projection of the sides downward to encase the steel side members, while the motor and radiator are encased in wood, with only a metal cover to the hood.

In the line of aluminum construction a body by Cole & Woop is shown on a Maxwell chassis, a limousine with all panels in aluminum unpainted, the framework being of wood; the moldings are stained green for effect and to show off the aluminum, but the body is really just ready for the painter. While the skill and ingenuity of the wood workman is probably equal to the production of extremely curved forms, he is likely to be called on in the future for simpler designs, less fantastic and eccentric, but even more graceful and artistic, and at the same time more easily constructed.

Seats, Permanent and Temporary.

Both in proportions and construction, the seats of the modern car leave little to be desired. They are roomy, generally well fitted for the back, wide enough for three in even moderate sizes, and well built, with good springs. The front seats, usually of the individual pattern, are equally roomy, well molded and comfortably upholstered. Many of the larger cars have ample room for five in the body, three, or even four at a pinch, on the rear seat, and two in revolving arms-chairs on fixed standards. A much larger number offer extra seats for for two in the body, in addition to the two or three on the fixed rear seat. The extra seats are contrived in perhaps twenty different ways, all savoring more or less of the experimental stage of invention, and few or none eminently satisfactory. In some cases they are each built on the inside of a door, with the lazy-back fixed to the top of the door or folding down. The majority of door-seats, however, are hinged up or down, with more or less crude supports, varying from a loose stick carried within the body and inserted as a brace, to hinged iron contraptions. Similar extra seats are hinged upward or downward from the sides of the car instead of the door; in some cases a single seat for two is hinged up or down from the back of the front seats. In one car the two extra seats are of wood and cane, sliding under the two front seats when not in use. The folding seats are fitted with folding backs of various forms.

A Quinby phaeton on a Smith & Mabley chassis has two permanent seats in the body in addition to the wide rear seat, the extra ones being hinged like a theatre chair, and worked by a lever attached to the door; the last person to enter stands until the door is closed, when his seat automatically swings down into its place.

Stowage and Furnishing.

A secondary but important advantage from the increased length of body is the

increased stowage space in different places. There is often a special drawer or box for extra tire and tire tools, and also special spaces for luggage, while the handbags and suit cases, which could not find room within the ordinary tonneau except on the feet and laps of the passengers, may be disposed of in front of the feet without discomfort. More and more attention is being paid to the utilization of every nook for some special purpose; several cars show a series of small drawers under the front seat for spare parts, and the body fittings in the way of toilet articles, card cases, watch holders and the like are now a part of the regular appointments of a closed car.

Overhead Protection.

No argument is needed as to the desirability of a certain amount of protection, even for the hardiest motorist, and the automobile is now used by certain classes who demand full and complete security from sun, rain and wind at will. The ordinary folding buggy or victoria top adopted, on the early stanhope and runabouts, directly from the carriage, with wood bows and fabric covering, has expanded into the Cape cart top in a variety of sizes and styles, the largest covering completely the full length of a car and effectually roofing both passengers and driver. With the back flap, the removable side curtains and the high boot, the whole body may be completely enclosed in cold or stormy weather, and yet the car may be made open at will.

In the way of permanent protection, more elaborate structures have developed, the simplest form being the touring top with movable curtains. The glass front sliding into the roof is found on many cars, and glass is freely used about the rear, sides and back. A 40-45-horsepower Locomobile chassis is fitted with a Quinby body with movable touring top, glass on sides and rear, and glass back of the front seat, as well as in front of the driver, curtains over the doors enclosing the body entirely. Next to this form is the landaulet, numerous and evidently in general demand, completely enclosed, but with rear top folding back at will. There is a wide field for the ingenuity of the body-designer in the elaboration and perfection of this type to meet the wants of the many who wish both closed and open body, the latter for general service all the year around and in shopping, calling and similar work, while in fine weather they would enjoy the open air.

Enclosed Bodies.

The limousine body is shown on all the prominent makes, and is appealing to many new motorists who appreciate the comfort and protection it affords to those not accustomed to vigorous outdoor life, and who in fine weather are content to take their share of oxygen through an opened window rather than under the bare sky. Many well designed and finely finished and fitted bodies of this pattern are shown by American makers. It is no longer the case that while certain firms were identified with successful makes of light open cars, the larger enclosed cars could be had from but a few. At the present time even the moderate-priced cars may be had with a variety of bodies and enclosed as completely as the user can demand.

Colors and Finishing.

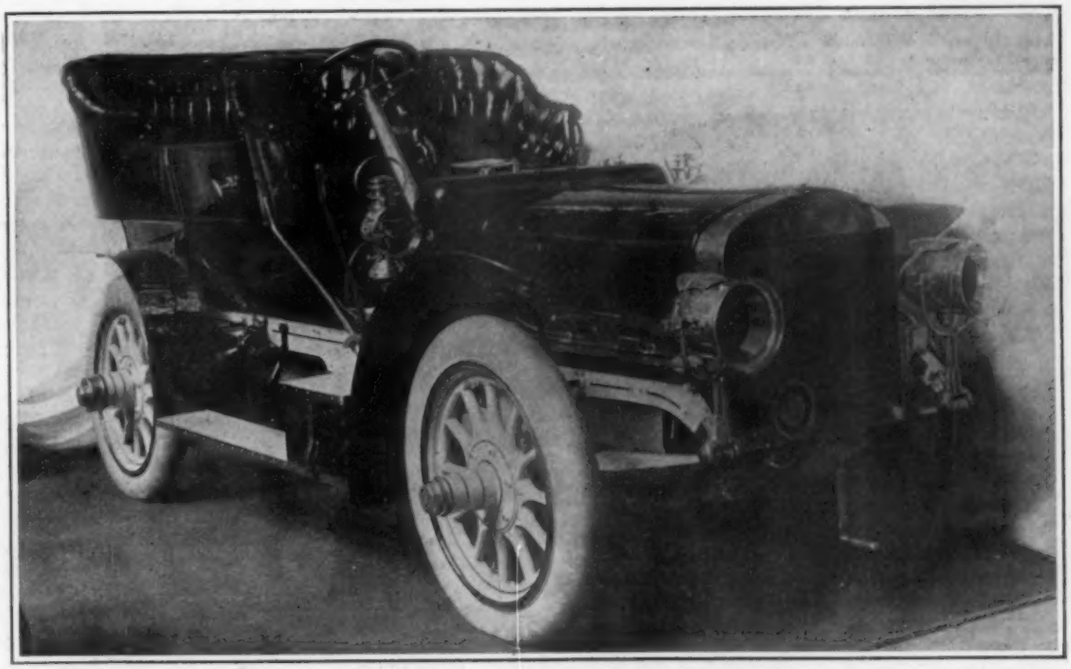
The finish of the cars is generally characterized by good taste in the important matter of colors. There are no really loud and offensive colors nor freak combinations, and only a few that attract by their oddity. The color display is perhaps conventional, but good. While the characteristic red is still seen on bodies and upholstery, and more frequently on gear, the royal blue is the more common, being used as the standard color by a number of firms. With gear of the same color, or a shade of yellow, it gives a very satisfactory appearance. The Brewster green is a general favorite, with the maroons and deep lakes long used in coach painting.

General Color Scheme.

The general color scheme is as a rule plain, a single body color, with black molding and fine stripe of red, green or light blue, with wheels and chassis to match, or finished in red or yellow, with black stripe. While the bright red and a few other striking colors are found in the seat coverings, dark greens and other quieter colors prevail, and the use of a bright yellow or other strong color as a distinguishing mark is less common.

A Few Examples.

It is impossible to pick out any large number of cars as examples, and in fact the bodies have been generally described in the reports of last week, but there are some points that are deserving of special mention. A very handsome body of novel form is shown on a Columbia chassis, 35-40-horsepower, its name, "royal victoria," indicating the style; the body, which is long and only moderately deep, having the graceful curves of the old victoria, structurally simple, but elegant in appearance. The door is low and wide and of graceful shape. The color is *café-au-lait*, with black moldings, and no stripe, the gear being in a



NEW CADILLAC CAR WITH 20-H. P. FOUR-CYLINDER VERTICAL MOTOR AND OPEN SIDE ENTRANCE BODY

lighter shade of brown; a victoria top is fitted.

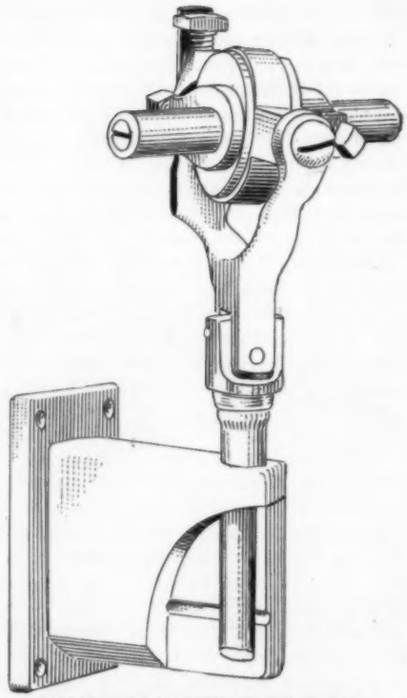
Another handsome body, by Frederick R. Wood & Son, was shown on a Panhard chassis, the general design somewhat after the victoria, with well-swept curves from front to rear, the door being low and wide. It was finished in maroon, with black moldings, relieved by two fine red stripes, a victoria top being fitted. An apron was provided for the rear seat, and in its cover, low down, near the feet of the passengers, was a place for a watch. Another Wood body on a Panhard chassis was of the phaeton type, finished in a rich grass green, with black moldings and two fine red stripes on the moldings; a touring top with glass back and front being fitted. These two American bodies were shown side by side with a handsome Labourdette body in green and black, also on a Panhard chassis.

The larger Napier car—28-horsepower—in the basement, was fitted with a body by Chauncey Thomas & Son, of Boston, finished in the characteristic Napier colors, green, black molding and white stripe, with bright red leather; a full extension top of green leather, lined with red leather, was fitted. This body would accommodate four persons easily on the rear seat, with two more in revolving chairs, while the single wide front seat had room for two beside the driver, if necessary. The other two Napier cars had London-made bodies, and all four were fitted with the hinged metal wind shield in front, easily removed, but when in place keeping the wind off the driver's feet.

The Apperson Brothers' 40-horsepower car was very attractively finished in cadet gray, panelled in light green with gold stripes, and lined with green leather

The Daimler body for the American Mercedes was notable from its very plain lines and the finish in a single color, a deep lake, without stripe, for its roominess and for the width of its door. The Willoughby body shown on the Standard chassis was very roomy and comfortable, and both simple and attractive in design, externally of the ordinary wood construction throughout, but with some features peculiar to its makers, which secure a maximum of lightness and durability.

The foreign exhibit in the Restaurant included, in addition to the Panhard and Bollée cars already mentioned, some very fine bodies by Rothschild, G. Dumond and other noted makers, offering an interesting comparison with American work.



MASON-KIPP VALVELESS OIL PUMP.
Pump Chamber Shown in Section.

Current Practice in Lubrication.

DURING the Madison Square Garden show, just ended, the writer took some pains to canvass the various methods of lubrication employed by a number of the leading builders for the engine and gear case. As to the former, these inquiries showed a rather striking diversity of opinion as to whether it is better to lubricate the engine cylinder and crankpin on the splash system, or by regular feed from a pump, or by sight feed. In regard to the crankpin particularly, a surprisingly large variety of devices was disclosed, and the only thing unanimously agreed upon seemed to be that that member is about the most difficult thing on the automobile to supply with oil. The lubrication of the sliding gears and their shaft bearings was also a point on which a good deal of disagreement existed as to the best methods, though certain tendencies were easily to be discerned.

Individual Pump Oiler.

A year ago it seemed as if the individual pump mechanical oiler was destined to have things all its own way, and machines using sight feed lubrication, assisted or unassisted by exhaust pressure or by a pump, seemed likely to be classed as out of date. The individual pump mechanical oiler, however, has proved itself by no means as perfect as it might be. The usual trouble with it is reported to be in the check valves, usually of the ball type, which for one or another reason do not always close when they should. This of course renders the pump inoperative, and the user may not know it until a bearing or a piston heats up and seizes. By using two balls in series on each side of the pump, the danger of this mischance is considerably reduced, as the failure of one ball to seat does not stop the operation of the pump, and the obstruction is likely to wash through after a few strokes.

Various Pressure Systems.

One result of this unexpected amount of trouble with the individual pump oiler has been to multiply the number of machines in which air or exhaust pressure alone is employed to feed the oil through sight feeds arranged on the dash, from which it flows by gravity to the several bearings. This arrangement, when the oil is fed directly to the pistons, is liable to be complicated by possible blowing by the piston rings, so that the oil has to overcome pressure before it can reach the piston. On the other hand, this blowing can only occur during a fraction of the cycle.

In connection with this arrangement, a relief valve is always supplied in the pipe from the exhaust header, so that any accidental increase of pressure in the exhaust pipe will not affect the oil. Usually a check valve is also provided to retain the exhaust pressure in the oil tank, but when this is done a relief valve or pet cock is necessary to let this pressure escape, when the car is stopped, unless a main shut-off valve is provided which can be operated without disturbing the sight feed adjustments. Where the exhaust pressure is used in this way it is commonly employed also to lift the gasoline from the tank (located at the rear of the frame) to the carbureter, and a small hand air pump is added to lift the gasoline just after the tank has been filled. In one or another of its slight modifications this exhaust pressure system is used in the Smith & Mabley Simplex, Cleveland, American Mercedes, Peerless, Speedway and many other machines, being, in fact, perhaps the most commonly found system at the show.

Allied to this system is the use of a single plunger oil pump, for which a small rotary gear pump is sometimes substituted. This pump forces the oil from the tank to the sight feeds, and a spring by-pass valve returns the surplus to the tank.

New Lunkenheimer Lubricator.

A new lubricator lately brought out by the Lunkenheimer Company, and described in these pages January 14, has been adopted by the Locomobile and one or two other companies. It is a separate plunger pump in which the oil feed is regulated, not by varying the stroke of the plungers, but by using separate sight feeds in connection with them, and requiring the oil to suck through the sight feeds before going to the pumps, which work normally in a partial vacuum because the sight feeds are never adjusted to supply oil as fast as the plungers could pump it. Double ball check valves are used to insure raliability as far as possible. This system has the evident advantage of giving positive feed, and at the same time enabling the operator to see at all times what the feed is.

Valveless Oil Pumps.

Another pump of considerable ingenuity, which the makers state has been in use in other forms for some years, is known as the "Valveless Oil Pump," made by the Mason-Kipp Mfg. Company. In this pump a shaft

carries on it a number of eccentrics which, instead of being set normal to the shaft, are at an angle thereon, and are connected by suitable straps and rocking joints to the pump plungers. The effect is to give the plungers a combined reciprocating and rotary motion, and they are drilled and grooved in such a manner as to form their own valves, which are opened and shut as the plungers rotate, thus dispensing with check valves altogether. In one form of these machines an automatic distributing valve is employed, so that a single plunger may feed oil to half a dozen pipes in rotation. It has a vertical stem with a star feed, which is rotated one tooth at a time by a pin on the eccentric shaft.

New Haynes Oiler.

Allied in principle to this is the new mechanical oiler of the Haynes car, which has a single plunger pump, and a distributing valve of conical form, in which an outlet registers with one or another of several ports in the seat, each communicating with its own oil pipe, so that the plunger dispenses oil to successive pipes on successive strokes. Arrangements of this sort certainly save much in the way of complication, as it should not be a difficult matter to get a distributing valve to work with entire reliability. Another device is the Hill Precision Oiler, already described in detail in these columns. It has no check valve, but instead an oscillating port actuated by positive mechanism.

Various Methods of Feeding.

In some engines, notably the Peerless and the Speedway, oil is fed both to the cylinders and to the main crankshaft bearings. In others, as the American Mercedes, the cylinders alone are fed, and in still others oil is fed to the crankcase only. When the main feed is to the cylinders it is usual to have a separate hand pump for forcing oil to the crankcase, and this may be supplied even when the main feed itself is to the crankcase.

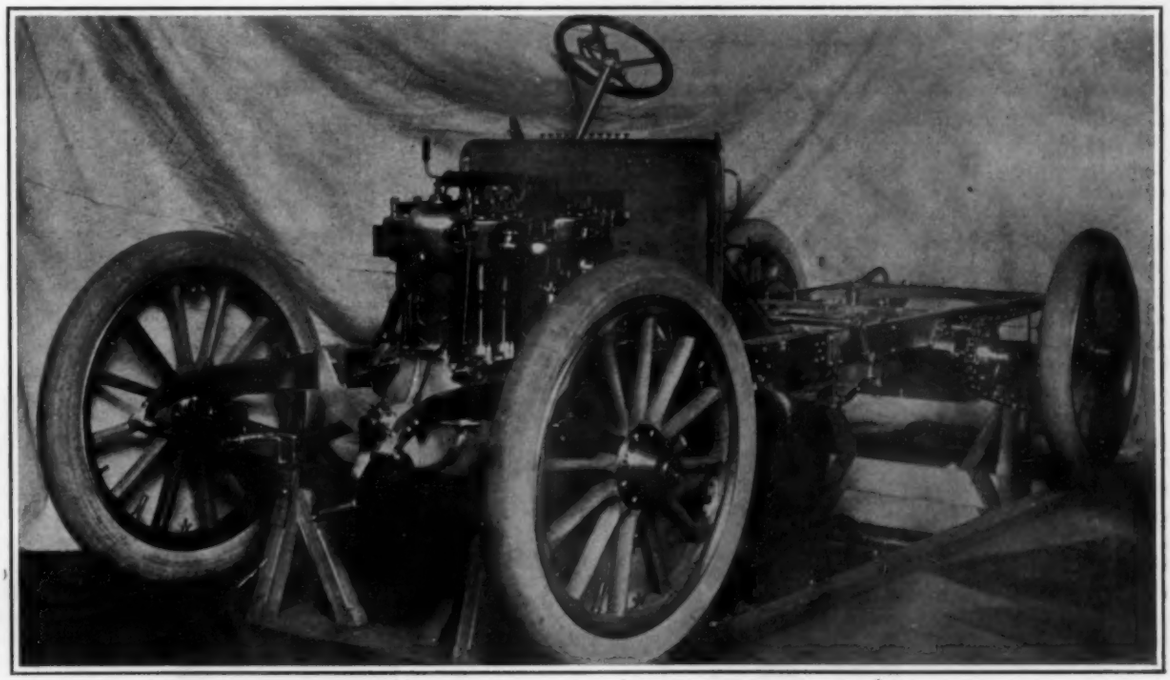
At present the preponderance of practice seems to favor direct splash lubrication for the cylinders as well as the crankcase bearings, but no census was made to settle this point. By far the largest number of builders interviewed depend simply on one or more oil holes in the top of the large end of the connecting rod, aided by what they consider suitable oil grooves, to catch the oil splashed about in the crankcase and convey it to the crankpin. Two oil holes are frequently seen, and in some machines the upper brass is pretty well gridironed with oil grooves. A few builders add oil holes and grooves in the bottom brass, but not many.

This practice is not universally accepted, and probably the best thing one can do to the top brass of a crankpin is to leave it untouched by oil groove or oil hole. There is no good reason why the oil cannot be fed to the slack side of this bearing, as it customarily is to every other sort of bearing. In a way, this is done in one machine by milling a good-sized slot in the bottom cap and brass, though in this machine the top oil hole and groove are still retained. In another the flanges at the ends of the bottom brasses are cut away, allowing oil to enter at the ends, but in this machine also the top entrance for oil is found.

Several special systems of lubrication were found which deserve mention. One of these, used in the Buffum car, was referred to last week. In the Thomas car a pump carries oil from a tank near the top of the engine to a row of sight feeds on the dash, from which it flows by gravity, plus pressure, to the cylinders. A by-pass pipe returns the excess of oil to the tank. This pipe is not provided with a spring relief valve, nor does the oil return simply by gravity to the tank, but a hand regulated needle valve is provided. The bottom half, or oil pan, of the crank-case has deep settling pockets, and the five crankshaft bearings are oiled by splash. The bearing metal is an alloy of 90 per cent tin, 5 per cent bronze and 5 per cent nickel.

The Winton car has an oiler provided with a horizontal barrel revolving in an oil tank in contact with a row of metallic wipers, which pick the oil from its surface and deliver it to separate pipes. The barrel, of course, turns at a rate of speed proportional to that of the engine.

The Pope-Toledo connecting rods are provided with scoops on their bottom caps. They have oil holes through the top half of the bearing, and oil grooves in the bottom brass. Oil is carried to the cylinders by a branch pipe from a single plunger pump, and this construction is frequently met with. Any probable inequality of feed is less than it might seem, because usually a check valve is provided close to each cylinder, which is backed by a fairly stiff spring, so that a pressure of several pounds is maintained by the pump. In the Pope car the makers recommend a mixture of about six or seven parts by bulk of gear case oil to two parts of flake graphite.



MERCEDES 40-45 H. P. CHASSIS BUILT BY THE AMERICAN DAIMLER CO., AT STEINWAY, L. I.
This Car is Made From the Original Drawings of the 1905 Model of the Unterturkheim, German, Company. Cylinders are 120 by 150 Millimeters. Valves Mechanically Operated and Located on Sides of Cylinders.

PHELPS CHANGE-SPEED GEAR, SHOWING TUBULAR CASING OF PROPELLER SHAFT AND REAR AXLE.

Change of Speed is Effected by Sliding Rod with Feather which Engages Individual Clutches on Second Motion Shaft Gears. Engine Base is Connected to Change Speed Gear Case by Heavy Iron Tube Dispensing with Cardan Joints in Propeller Shaft and Giving Straight Line Drive.

The Royal Tourist, Premier and a number of other machines observed are provided with McCanna individual pump oilers.

In the Elmore, advantage is taken of the pressure produced in the crank-case on the compression stroke of the piston to maintain through a check valve a constant air pressure of about six pounds in the oil tank. This pressure feeds the crank-case and the cylinders, the oil entering the former on the odd strokes of the piston, when the crank-case pressure momentarily ceases.

Bottom Cap Scoop.

In the Smith & Mabley, Mercedes, Apperson, Peerless, National, and a few other motors the bottom cap is provided with a scoop which catches the oil in the bottom of the case, and carries it forcibly to the interior of the bearing, from which it is carried around by the rotation of the pin to the top half. In only one of these, however, the Apperson, was the theory found to be carried to its ultimate conclusion by the omission of any hole or groove in the top brass, although the Smith & Mabley engine had only short grooves at the four corners of the top brass.

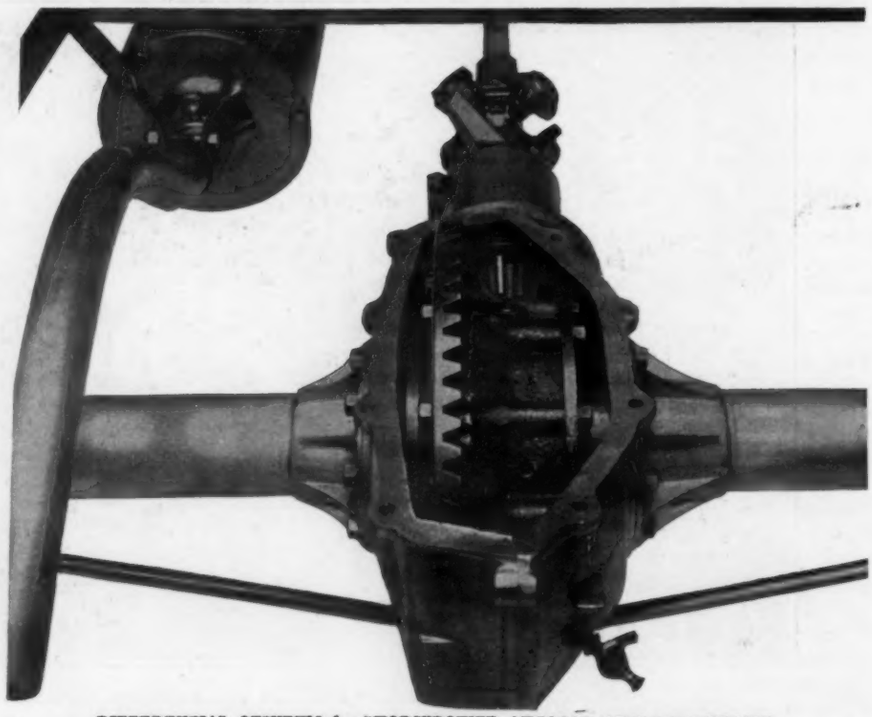
In a few engines oil is carried out centrifugally by carriers over the main bearings to the crankpins. Of these the Frayer-Miller and the Columbia engines occur first to mind. In both of them the side of the crank next to the bearings is provided with a ring either turned in the solid stock or separately formed and riveted to it, and from this ring the oil goes to a hole drilled in the center of the crankpin and feeds to the outer surface by a hole at the center of the bearing. This is without doubt an excellent way to oil the bearings.

Oil Level in Crankcase.

Where splash lubrication is depended on it is necessary to determine in some definite manner the level of the oil in the crankcase, and also to protect the motor against the consequences of flooding one cylinder and starving another when going up or down a hill. For this reason every motor examined in which this system was depended on was provided with one or three partitions in the bottom of the crankcase. Usually these partitions come up only to the height of the oil level, and each partition has in it a vertical hole connecting with a plug or pet cock below, by opening which the oil may be run off till the top of the partition is reached. In one motor no partitions and no pet cocks were used, but each end of the crankcase had an overflow hole a little higher than the normal oil level, so that an excess of oil would run out of itself when the car struck a grade.

Relieving Crankcase Pressure.

Nearly all the four-cylinder motors examined were provided with openings of one or another sort to prevent an accumulation of pressure from gas getting past the piston rings. But for this provision, the pressure in the crankcase would tend to force the oil out of the crankcase bearings as well as past every hand hole gasket in the case. In most cases these openings were connected to short or long standpipes carried up high enough to insure that no oil spray should be forced out from the top, and the open ends of the pipes, through which oil could be poured if desired directly into the case, were closed by wire gauze screens to keep out dust. So far as learned, the general preference with speed changing gears is to use the heavy oil known in the trade as gear-case oil. This is frequently a cheap grade of cylinder oil, which, however, is good enough where it does not have to stand high temperatures. A number of makers and users have found that when this oil is depended on to feed the gear shaft bearings by splash from the interior of the gear box, it carries with it more or less gritty powder worn from the gear teeth, and this makes



DIFFERENTIAL OF NEW 16-20 HORSEPOWER AUTOCAR AT GARDEN SHOW.

Note that Casing is Divided Vertically and is Also Provided with Removable Cap.

trouble with the bearings. Some makers avoid this to a greater or less extent by using wire gauze screens or felt pads in the oil pockets over the bearings. Others depend on frequent changing of the oil, or on a deep settling pocket below the gears. The new Peerless car uses this system, though last year the gear shafts were independently oiled by ring oilers and separate oil pockets. Mr. Kittredge, the manager of the Peerless company, in speaking of this, explained that users were apt to forget that the shafts were separately oiled, and therefore failed to replenish these oil pockets.

INCREASED USE OF BALL BEARINGS.

With the rapidly increasing use of ball bearings on the gear shafts, the matter of lubrication of this part of the automobile is naturally in a somewhat unsettled state. Some users of these bearings protect them carefully from the oil contained in the gear case by enclosing the bearings in housings which come close to the shafts, and pack the housings with soft vaseline. Among these may be mentioned the American Mercedes and the Smith & Mabley machines. Others use the ball bearings without any protection whatever, and a few were found who recommended the use of thin grease for the gears. When properly used, this grease is in some ways superior to oil. It does not churn, and therefore wastes less power, since the gears will cut a path in it and then revolve freely. It cushions the shock of changing speed, which wears the gears as fast as ordinary running in mesh. It likewise prolongs the running life of the gears because, being thicker, it does not squeeze out as readily under pressure. Moreover, it forms a natural protection for the bearings from the heat of the bearings.

For satisfactory results, the grease should be a little thin, because it is not warmed by the heat of the bearings, as it is in ordinary lubrication.

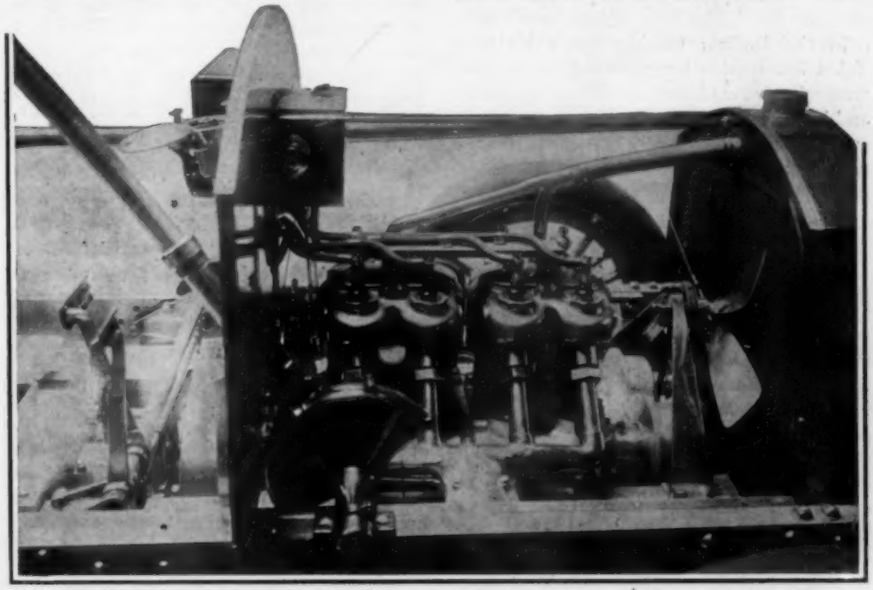
DIRECT FEEDS TO BEARINGS.

In several machines in which splash lubrication was used in the gear case the shaft bearings were measurably protected by having oil or grease fed to them directly, instead of coming from the interior of the case. Sometimes separate oil feeds would go to the upper shaft bearings, where one shaft was above another, and the lower shaft would get the oil direct from the interior of the case. In one or two instances of this sort the shafts run in plain case-hardened steel bushings, and it may be that these sufferered less from the intrusion of steel dust than a bronze bushing.

For the lubrication of the differential and bevel driving gears in propeller shaft drive machines, crankcase oil seems to be commonly used. Grease or vaseline is used in the hub bearings and most of the minor bearings as well. The outboard bearings of sprocket shafts, when these do not run in balls or rollers, are similarly equipped. On practically all the cars examined there were evidences that the subject of lubrication had not been overlooked.

Ignition Systems at Garden Show.

AT the Importers' Salon, the significant development in the ignition devices was the visibly increasing popularity of the magneto, and apparently of the low-tension magneto in preference to the high-tension variety. This development, which has been gaining headway for two or three years past, does not seem to have struck this country as yet, for most of the make-and-break igniters used here in the early days were unsuited to high-speed work, and the public has not been schooled to distinguish between suitable and unsuitable devices of the sort. Consequently the jump spark was almost the only thing found at the Madison Square Garden Show, and the exceptions might have been counted on the fingers of one's hand.



FRONT END OF CHASSIS OF NEW 16-20 H. P. VERTICAL CYLINDER AUTOCAR.

Inlet Valve Side, Palm on Inlet Pipe Header Covers Carbureter and is Heated by Small Pipe Connection from Exhaust. Bevel Gear on End of Steering Post Engages Semi-Circular Rack, not of Irreversible Type. Fan Suspended on A Frame. Cylinders 3 1-2 by 4 inches.

LOCOMOBILE MAKE-AND-BREAK.

The most prominent exception was undoubtedly found in the Locomobile, which has gone over bodily to the low-tension make-and-break system. The Locomobile igniter, which is much like the Mercedes, with one or two handy features of detail added, is located in side pockets in the inlet valve chambers, and gets its current from a modified Remy magneto. In place of the intricate system of alternative batteries, charging magneto, automatic switch, hand switch, spark plugs and high and low-tension wires, found last year, there is found to-day only the magneto mounted on the crank-case and directly geared to run at twice the speed of the engine, and a single wire rising to a bus bar connecting the four igniters. The magneto armature, which is of the H, or shuttle, type, and gives an alternating current, is provided with no means for advancing its angular rotation to suit the advance of the spark time. Instead, it is set angularly to give its strongest spark when the spark time is advanced to the utmost, the argument being that a hot spark is less desired when running at slow speeds. As it is perhaps generally known that the make-and-break spark requires a much smaller apparent lead to the ignition than the jump spark, and as a weak spark produces a slower flame propagation than a hot spark, it may be supposed that very little alteration in the spark lead is ordinarily required, although this point was not minutely investigated. Several leading foreign makers have proceeded along similar lines.

WINTON CAR SYSTEM.

The new Winton car affords another example of the use of the Remy alternating current magneto, but in this case the current is delivered to a single spark coil without a vibrator. A secondary current distributor is driven by 2 to 1 pinion and gear from the armature, the arrangement being much like that of the Eisemann magneto, except that the four points of the distributor do not actually touch the revolving disk from which they successively receive current. The armature of this magneto is connected by a spiral grooved sleeve to the pinion driving it, and the primary timer, consisting of a double-lobed cam acting against a spring blade making contact with a platinum tipped contact screw, is attached to the other end of the armature shaft, so that by advancing or retracting the spiral sleeve one may vary the

timing, both of the primary interruptor and of the distributor, as desired.

Two Systems of Ignition.

The Speedway car and the Buffum touring car were the only examples of the tendency so frequently seen at the Importers' Salon to carry two distinct systems of ignition on one car. The former is provided with a Lacoste high-tension magneto with secondary current distributor, which delivers current to spark plugs directly over the exhaust valves on the left side of the engine. A set of storage cells and individual vibrator coils, with separate timer, give current to a set of similar spark plugs over the mechanically-opened inlet valves on the other side of the engine, and by a switch either system can be put into action at will.

In the Buffum touring car a Holtzer-Cabot low-tension magneto and single low-tension spark coil supply current to make-and-break igniters on the right side of the engine, and two separate batteries are provided with individual vibrator spark coils, which give current to spark plugs in the cylinder heads.

High-Tension Distributors.

One of the near probabilities of the past year or two has been the development of a successful high-tension distributor for sparking a number of cylinders from one coil. The simple discovery that it is not necessary to make the brushes, or their equivalents, come in actual contact with the distributing segment has had the important effect of producing a considerable number of devices, most of which are to all appearances perfectly practical.

In all of them the high-tension current is delivered by a single brush to a hard rubber disk or ring, in which a metal segment is inlaid. Around the periphery are located as many insulated metal pins as there are cylinders, all of them usually being simply screws let into the hard rubber outside case, and the points of these screws come within 1-32 inch or thereabouts of the revolving metal segment. As the spark is able to jump 3-8 or 1-2 inch, the small additional resistance simply serves the purpose of an auxiliary spark gap, without an extra device for that purpose. The timing is invariably accomplished in the primary circuit, usually by a two or four-lobed cam, or an insulating drum with the same number of metal segments inserted, all of them making contact with a single brush or spring instead of two or four. In almost every case this primary timer is connected to the distributor in such a way as to turn with it, and yet be wholly insulated from it. Some of these devices are made by the makers of the ignition apparatus, among whom were noted Herz & Co., the Pittsfield Spark Coil Co. and the Dayton Electric Manufacturing Company. Other makers, like Smith & Mabley, prefer to make their own apparatus. It cannot be questioned that the tendency is strictly logical, and that thoroughly satisfactory devices of this sort are sure to be common before long.

A neat detail observed at the stand of the Dow Portable Electric Company was a contact screw for coil vibrator, which could be removed and cleaned without changing the adjustment. It was threaded into a nut with a T-shaped head, which itself was split and clamped by a smaller screw. Under the head of the nut was a small compression spring, and at the lower end of the stem, as it might be called, were two oppositely projecting points, as of a small pin driven through before the nut was drilled and tapped. These fitted into notches in the under side of the bracket which held the nut. The bracket, of course, was notched to let the metal points go through, and the spring held the whole thing steady.

Soot Proof Spark Plug.

In the matter of spark plugs, the principal thing noticeable is the general acceptance by makers of the so-called "soot proof" principle, and all plugs are now made with the porcelain or other insulator formed to compel the spark to travel a considerable distance from the central stem to the surrounding metal wall before it can short-circuit over any carbon deposit on the porcelain. With this improvement, and the growing adoption, in one form or another, of the auxiliary spark gap, and at the same time with the same careful attention paid to the details of lubrication, the sooted plug has now ceased to be the motorist's bugbear, as it was a few years ago.

Radiators and Methods of Cooling.

THE impression given by a study of the radiators at the Madison Square Garden Show is that the square tube honeycomb radiator, at least in its earlier forms, has been tried and found wanting; that various fairly efficient substitutes have been found, and that the trade in general is contenting itself with these substitutes until some one devises a honeycomb radiator without the liability to leakage and clogging that marks the square tube type. So far nothing of equal efficiency appears to have been found, but a number of other forms have reasonable efficiency combined with comparative immunity from trouble.

Horizontal Tube Type.

Conspicuous among these latter forms is, of course, the horizontal flattened tube type used for a year or more past on the Pope-Toledo cars. The ends of these tubes are soldered into headers at the sides, and the headers are partitioned in such a manner as to require the water to pursue a zigzag course through the tubes, dividing in multiple between groups of three or more tubes in each direction instead of passing through the whole in series, in order to reduce the resistance to flow.

Quite similar to it is a radiator noticed on the Ardsley car and known as the "A Z." It has thin flattened vertical tubes, which in front are crossed by strips of metal bent double lengthwise, and notched at their edges to fit over the vertical tubes, which they thus serve to steady, while giving the construction somewhat the appearance of a square tube radiator. These tubes are perhaps an inch or an inch and a half from front to back, and three of them from front to back make the depth of the radiator. At the back they are steadied by a much smaller number of cross strips similar to those in front.

Whitlock Radiator Popular.

The familiar Whitlock radiator is much in evidence and seems to maintain its deserved popularity. Along with it are seen several other forms of corrugated radiator, which, however, differ only slightly from it. The French type of radiator, known as the "Cloisonné," is seen on most of the French cars, and on the Napiers in the basement besides. It is a compact type of zigzag horizontal flanged tube, with the coils so arranged as to fit into the front of the conventional outlines of bonnet, and surrounded by a polished brass band, giving them the external appearance of a water tank. The tubes are not especially small, being perhaps 1-2 inch in diameter, and they hold water enough in themselves to make a tank unnecessary.

Other familiar radiators have horizontal flanged tubes soldered into headers at each side, and these headers are so partitioned horizontally as to compel the water to follow a zigzag path through the tubes.

Vertical Flanged Tubes.

Another type of radiator, which apparently should work very well with gravity circulation when required, has two headers at top and bottom, which are connected by vertical flanged tubes of perhaps 3-8-inch diameter. It gives the easiest possible circulation and is easy to clean and to drain. A few, especially of the lower-priced machines, have banks of flanged tubes under the front frame, after the fashion common two or three years ago.

Rotary Gear Pumps.

The rotary gear pump, which a couple of years ago was rather out of fashion, seems to be gaining some new converts. It is positive so long as it is placed below the water level, so it does not have to lift the water. On the other hand, it is apparently more easily damaged by dirt, and needs careful provision for straining. It is noteworthy that most of the makers with the

longest experience still adhere to the centrifugal pump as the longest-lived and the most generally reliable.

Whatever sort of pump is used, it should, and often does, have either a breaking piece or a slipping piece in its driving shaft, so that no damage will be done on starting the engine if the pump or pipes should be frozen. Of course, if it is driven by belt or friction wheel, this is not necessary.

Demonstration Systems at the Garden.

AN important feature of the Garden show was the demonstrating of cars to prospective purchasers by taking them for short trips, during the course of which the advantageous features of the machines, as revealed in actual operation, were pointed out. From the small beginning of a few years ago, when a single car sufficed for most exhibitors, this feature of the show has grown until, during the last exhibition, few of the larger exhibitors had less than four demonstrating cars in operation, while some had six or seven. The number in use by some of the leading exhibitors was as follows: Pope, seven; Locomobile, six; Cadillac, six; Winton, five; Ford, four; Rambler, four; Oldsmobile, four; Pierce, four; Columbia, four; Northern, four; Packard, four; Peerless, two; National, two; Autocar, two; Stevens-Duryea, two cars.

At times more than one hundred demonstrating cars were lined up outside the building on Twenty-sixth and Twenty-seventh streets and on Fourth avenue, in themselves constituting a show of no small proportions, while prospective purchasers awaiting their turns and the usual throng of curious idlers crowded the sidewalk and watched the arrival and departure of the cars.

Systems of Handling Cars.

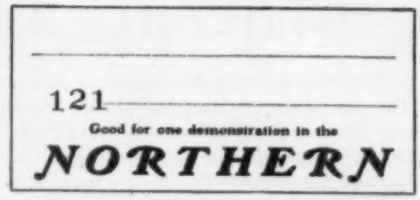
To handle the large number of riders without confusion and to maintain a record of demonstrations required, a system was necessary, and a comparison of the plans adopted by some of the exhibitors is interesting. The most common plan, and the one which was used by the Packard, Peerless, Oldsmobile, Cadillac, Pierce, Northern and many others, comprised an appointment book, with spaces for the names and addresses of prospective purchasers, and the number, time and date of the demonstration. This was kept in the show booth, and engagements for demonstrations were entered as fast as made. Usually a card was also filled out with practically the same information, and given to the demonstrator when he came to the booth to take out the party, and was returned by him at the end of the trip, signed and containing many comments considered necessary.

This general plan was subject to modifications, however. Some of the exhibitors preferred to keep the demonstrators outside, sending out cards by messengers, who conducted the customers to and from the cars, and who remained outside until the return of the cars. This plan was used by the Locomobile, Pope and others. The Pope system, however, devised by F. C. Gilbert, used a daily chart instead of a book at the stand. The chart was ruled vertically into spaces representing each half hour of the day, and horizontally for each of the seven demonstrating cars, making it easy to see at a glance the engagements of each car for every half hour of the day.

A defect of the appointment system was its inelasticity. As long as both parties kept their appointments on time there was no difficulty; but delays were likely to upset the entire schedule, and the failure of a party of riders to appear resulted either in the idleness of the car during that period, or whoever happened to be in the booth at the time got the ride.

A More Elastic System.

In order to obviate these disadvantages a more elastic system was devised by Mr. Hildebrand, of the J. Stevens Arms and Tool Co. Two demonstrating cars were used, and the trips were of 15 or 20 minutes' duration, the drivers reporting at the booth at the end of each trip. Applications were listed in the order received. Each person was notified of the approximate time of the ride, but advised at the same time to be on hand somewhat earlier, in case of an earlier opportunity occurring. Each was also given a numbered card corresponding to his number on the list. When an operator returned to the booth, the next name on the list was called. If no response was received the name was checked, and the next man given the ride, thus keeping the cars constantly moving, and a person who missed an appointment would not have long to wait for another opportunity, as his name would head the list until the demonstration was given.


POPE MANUFACTURING COMPANY,

PLEASE FURNISH A FREE DEMONSTRATION TO

Name_____

Address_____

Day_____ Hour_____

Hartford / Tribune } Car No._____

(Operator must collect and retain this slip before giving the demonstration called for.)

APPOINTMENT MADE BY	DEMONSTRATION BY

POPE COMPANY'S DEMONSTRATION CARD.

121

Good for one demonstration in the

NORTHERN

DEMONSTRATION CARD USED BY NORTHERN.

Gave Rides to All.

Only one exhibitor—the Ford company—employed the old plan of giving a ride to any one who asked for it. No appointments were made, but, as far as possible, all who applied were taken out, and there were at times twenty-five or thirty persons waiting outside for an opportunity to get into one of the cars. Others who started out with this plan were forced to adopt more systematic measures, and took out only likely customers and those recommended by local agents. Some of the leading exhibitors, however, among them Mr. Parkhurst, sales manager of the Peerless Motor Car Co., believed in giving rides to as many as possible of those who asked for them, considering it good policy from an advertising point of view.

Most of the exhibitors were unable to meet the demand for demonstrations, and were obliged to turn away many applicants. What the situation will be next year can only be surmised; but the experience of this year's exhibition shows that the proper and effective management of demonstrations presents a problem of no little difficulty. Had the weather conditions or the state of the streets been less favorable during the show, the effect upon the business done would undoubtedly have been most marked.

It is worthy of remark that, despite the large number of demonstration vehicles in constant operation upon the streets adjacent to the Garden, no demonstrators were arrested for violation of the speed laws.

While the automobile business in Louisville has been at a standstill for the past month in consequence of the bad weather, it promises to improve materially in the spring. Orders for a number of fine cars have been booked and in several instances deliveries have been made. The Automobile Club will hold a meeting in a short time to arrange several runs for the spring. Very few cars are seen on the streets owing to the mud and slush.

Many a tow home behind a "haymotor" could have been avoided by carrying a spare chain, or at least a few spare links, in the toolbox; and the same may be said of a number of small parts. The automobilist should make a point of carrying duplicates of the parts that are most likely to give trouble.

Final Round-Up of the Garden Exhibitors.

TRANSPORTATION delays resulting in the late arrival of exhibits at Madison Square Garden, changes of location from those originally indicated upon the plans of the automobile show, and absence of exhibitors when stands were visited, resulted in the omission of the descriptions of several exhibits, both of complete vehicles and sundries, from the issue of last week, which are here appended.

Complete Cars.

Bartholomew Co.—The distinguishing feature of the Glide car, which was on view for the first time at an Eastern show, is that the body and the mechanism are mounted on independent sets of springs, which arrangement is claimed to not only make much easier riding for the passengers, but also to protect the power plant from strains in traveling over rough roads or car tracks, etc. Three models were shown, a side-entrance touring car of 12-14 horsepower with a two-cylinder horizontal opposed engine, a lighter side entrance car of similar construction, except that the engine has but one cylinder and is of but 10 horsepower, and a single cylinder runabout of 8 horsepower.

Except for the differences in the engine, as noted, these cars are similar in the general features of their construction, having planetary transmission, float-feed carbureter, automatic lubrication, jump spark ignition, Midgley tubular steel wheels, etc. Water-cooling is employed, the radiator being vertical and placed in front of a modern shaped hood, which contains the gasoline and water tanks.

Cleveland Motor Car Co.—The company, which has no connection with the former Cleveland Automobile Company, and which exhibited for the first time, showed a very handsome light touring car of 18-20 horsepower, following the modern European practice in its construction. The motor has four vertical cylinders, cast in pairs, with mechanically operated and interchangeable valves, mounted upon an aluminum crankcase, which in turn is carried on a pressed steel sub-frame. The cam shafts and cams are forged in a single piece and are driven by fiber gears from the crank shaft. Sliding gear transmission is used, having three forward speeds and one reverse with direct drive on the high speed. The drive is by a propeller shaft with universal joints. The external cone clutch is leather faced with springs placed under the leather to ensure a gradual engagement and there is a universal joint between the clutch and the transmission.

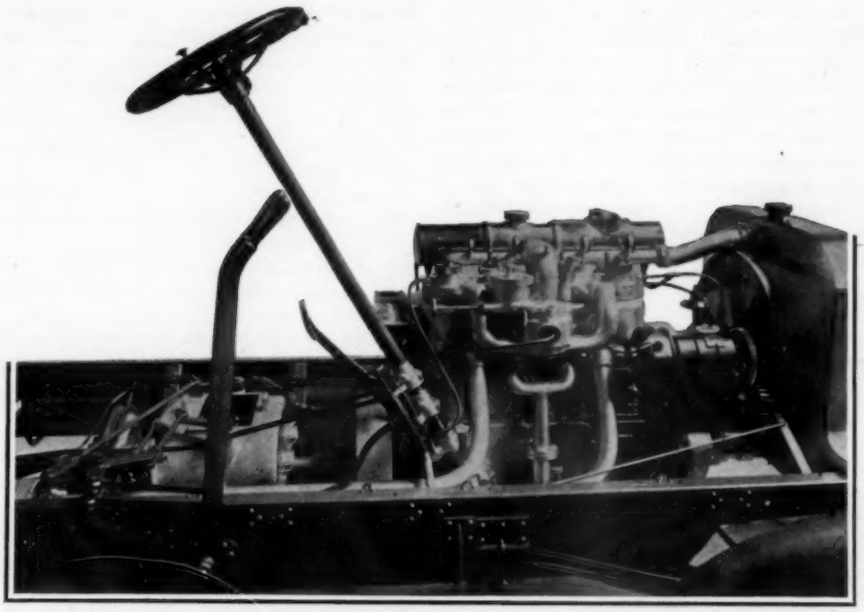
The carbureter is of the float-feed pattern and is automatic. Ignition is by a jump spark from storage batteries with a separate coil for each cylinder. The cooling of the cylinders is effected by a gear driven centrifugal pump and a honeycomb radiator and fan. The water jackets of the cylinders are divided vertically into two compartments connected at the bottom. The water goes in at the top of the chamber on the exhaust side and flows out through the cooler inlet side.

The throttle and spark control levers are placed on top of the steering wheel and move on concentric semicircular racks. There are three brakes, the foot brake being double acting and interlocking with the clutch. A side lever operates an internal expanding brake in each of the rear hub drums. The cylinders and gears are splash lubricated, while the crankshaft, connecting rod and transmission bearings are lubricated from a forced feed automatic oiler with sight feed tubes on the dash.

The wheel-base is 91 inches, the tread 54 inches, and the weight 1,800 pounds. The regular body shown was a five-passenger side-entrance tonneau.

Model Gas Engine Works.—A new and notable feature of the 1905 Model touring car is that the entire body is hinged to the rear of the frame and by the withdrawal of a couple of bolts can be raised by one person in less than two minutes' time, giving easy access to the engine and other mechanism. The car is made in three models of 12, 16 and 20 horsepower, respectively, all with side-entrance touring bodies and of the same general construction. The 12 and the 20-horsepower cars were exhibited in the Garden and the 16-horsepower car was used for demonstrating purposes outside.

PACKARD EXHIBIT AT THE GARDEN, WITH HIGHLY POLISHED CHASSIS IN CENTER, CLOSED CAR ON LEFT.



ENGINE OF WINTON 16-20 H. P. MODEL C AT THE GARDEN.
Inlet and exhaust side. Carbureter is placed close to inlet valves. Gear driven magneto immediately behind fan. Double spring suspension shows in right hand corner.

The motor is of the double-cylinder horizontal opposed type arranged longitudinally in the center of the angle steel frame. The transmission is of the sliding gear type with three speeds forward and one reverse, operated by a side lever. The clutch and the hub brakes are actuated by a single pedal, which first releases the clutch and then, if moved to its limit, applies the hub brakes. Another pedal sets the brake on the transmission.

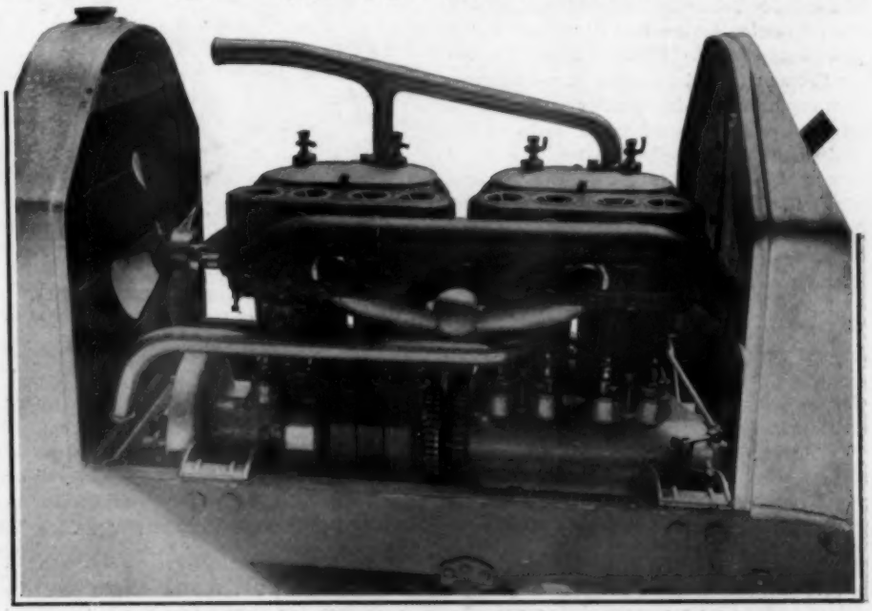
The steering is by a wheel with the spark and the throttle levers located on the steering post. The cooling system comprises a tubular radiator slung beneath the front of the frame, a tank carried beneath the bonnet and a centrifugal pump mounted on the frame with the engine and driven direct from the flywheel. Lubrication is by an automatic force feed lubricator mounted over the engine. Ignition is by a jump spark from battery and coil.

Warren Automobile Co., Warren, Pa.—The Barnhardt car was exhibited for the first time in this city by the Warren concern. It is a 50-horsepower touring car, with four-cylinder motor in front, three-speed sliding-gear transmission and propeller shaft, and bevel gear drive. An A. O. Smith pressed steel frame is used. Ignition is by make-and-break, current being supplied by dry cells; but jump spark with magneto and storage battery will be furnished on order. The wheelbase is long—110 inches—and allows ample space for an extra wide side door. Under the body there is a large luggage compartment, with a tight-fitting door to exclude dust; there is another smaller storage space under the front seat, where tools and small parts may be kept. Hub and transmission shaft brakes are operated by lever and pedal in the usual manner. The wheels are 34 inches in diameter, with 4 1-2-inch tires. In running order the car weighs 2,850 pounds.

Sundries and Accessories.

Diamond Rubber Co., Akron, O.—All Diamond tires for 1905 are made with "wrapped tread," that is, there is an extra layer of fabric floating in the thick rubber on the tread which protects the real structural fabric. When the rubber of the tread wears down to this layer, the floating strip of canvas is stripped off of the tire shoe, with such rubber as adheres to it. The tire can then be recovered and made just as good as ever at a cost approximately 33 1-3 per cent. of the original price, as there has been no surface wear on the fabric. In the larger sizes the proportionate cost for recovering is somewhat less than one-third. Nearly all of the Diamond auto tire product this season is of the clincher type, handmade and molded, with a few single tubes for small runabouts. Diamond tires made with Bailey anti-skid tread and also with Webb chain grip, were on exhibition. But the Diamond company has just brought out a tire protector of its own, similar to the familiar Samson. To the rubber surface of the tire is vulcanized a chrome leather cover having a folded tread which is thickly studded with flat headed steel rivets. There is a ply of leather between the rivets and the rubber to prevent internal wear.

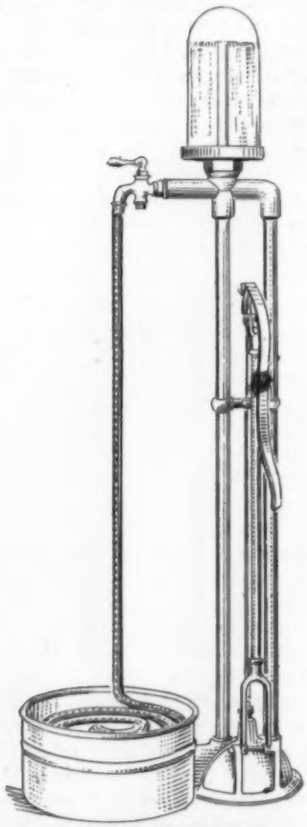
R. E. Hardy Co., New York.—Samples of the twenty-six different styles of "Sta-Rite" spark plugs made by this concern, which removed last year from Detroit to New York, and changed its name from the Detroit Motor Company, were shown in a small space in the gallery. These plugs are made with English and metric threads and in a multiplicity of lengths, diameters and shoulders to fit different popular cars. The plug has only one sparking point, the other "point" being any part of the inner end of the shell that is nearest to the platinum pin in the end of the central bolt. Both mica and porcelain are used for insulation. In addition to its own products the Hardy company showed several articles for which it has the selling agency. These include jump spark coils, distributors, jacks, the Motsinger ignition dynamo and the Tokheim gasoline storage and pumping outfit. A small model of the last-named device was shown to illustrate the dome feature, whereby a measured quart or gallon of fuel is visibly pumped into a glass dome before it is allowed to run into the tank of



MOTOR OF STEARNS 40-45 H.P. CAR ON EXHIBITION AT THE GARDEN SHOW.
Cylinders 4 7-8 by 5 7-8 inches, with valves grouped on one side. Inlet and exhaust pipes are held in place by the same side bridges. Gear driven high tension magneto in center alongside base.

the car. It is so piped also that any surplus gasoline after a tank has been filled can be run back into the underground reservoir.

E. J. Willis Co., New York.—The exhibit of this company is really an emporium of

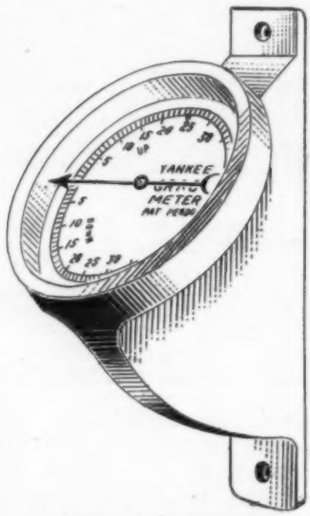


DOME GASOLINE PUMP.
Gasoline is pumped into graduated glass dome and flows to tank in car by gravity through faucet. Residue drains back to reservoir when pump handle is raised.

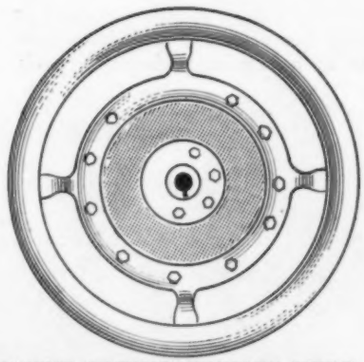
automobile accessories and supplies. Among the interesting devices may be mentioned the new 1905 Yankee silent muffler, Yankee grade meter and Yankee non-vibrating steering wheel. This muffler is composed of twenty-four opposed spring disks on the end of the exhaust pipe; at twelve regular intervals, the pipe is bored with several small holes opening into the chamber; the gas passes into the radiators at the same time and escapes from around the outer edges of the disks. The grade meter, which is fastened to the dash, with numbers and indicators on the dial sufficiently large to be easily read from the seat, gives the grade going up or down to 35 per cent., sufficient for ordinary touring purposes. The diaphragm of the steering wheel is composed of flexible chrome leather and rubber, with brass spokes just long enough to give the hands a firm hold.

Hine-Watt Mfg. Co., Chicago.—The exhibit of this company consisted of a large assortment of acetylene lamps for automobiles, and generators, the latter being a specialty. The largest generator made by the concern holds 54 ounces of carbide, and in order to prevent heating from the use of such a large quantity, tubes are run through the water reservoir, after the fashion of flues in a boiler, so that there will be a circulation of cooling air. The air has free access to the tubes. After the gas is generated it is piped to a chamber placed in the center of the water space, where it is cooled by the water before passing to the burners. Regulation of the generation of gas is effected by the pressure of the gas itself on the water feed. The generator mentioned is capable of supplying six lamps simultaneously.

Mason-Kipp Mfg. Co., Madison, Wis.—A valveless oil pump, made by this com-



YANKEE GRADE METER.
The pointer on the dial indicates the grade up or down. This instrument is intended for attachment to the dashboard.



YANKEE CUSHIONED STEERING WHEEL.
This wheel has a rubber cushion in centre, shaded in drawing, to absorb vibration.

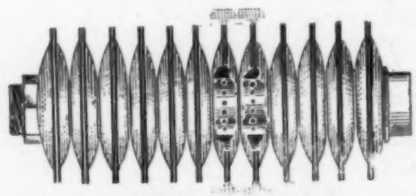
pany, is shown in the basement; though long in use on steam traction and stationary engines, its application to the automobile engine is comparatively recent. By means of simple mechanism not easily clogged or obstructed, it will throw oil against a pressure of 1,400 pounds to 2,000 pounds.

Cassidy Cap & Muffler Co., Amsterdam, N. Y.—A most useful article for motorists, or, in fact, for almost any one for outdoor use, is the Cassidy cold-proof face and head protector shown by this company. Made of heavy knitted worsted yarn, with brass fastenings, can be attached to cap and fits snugly about the neck and face, or may be worn merely as a neck and ear protector.

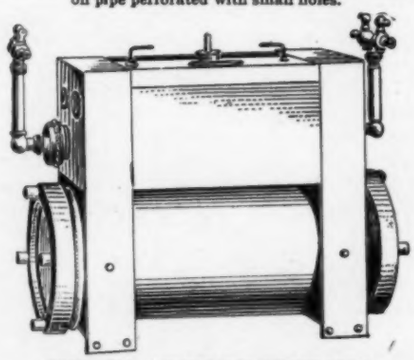
Noera Mfg. Co., Waterbury, Conn.—A varied assortment of bicycle and auto pumps and oil guns are shown at this stand. The company makes a specialty of its "Red Devil" and "No. 100" pumps, both of which are sold in quantities to tire manufacturers. Its oil guns are shown in the several sizes from 6 to 10 inches.

Hyatt Roller Bearing Co., Harrison, N. J.—The well-known Hyatt roller bearings, as applied to transmission gears, counter shafts, hubs and axles, are shown in this exhibit, a number of axles of different manufacturers being shown in which these bearings are used. In addition to its line of automobile bearings, the exhibit also includes an assortment of bearings applicable to other kinds of machinery. To show the superiority of the Hyatt bearings, two stands are shown, a balance wheel mounted on each, one fitted with roller bearings and the other with plain parallel bearings; the difference in friction losses is very readily seen. A very striking and attractive feature of the exhibit of this company is a large revolving model of a Hyatt bearing, suspended above and in front of the stand. The roller is fitted with internal electric lights which burn at intervals, and is driven by an inside motor having no apparent means of support, but which rests upon parallel shafts.

I. Lehman, Cleveland, O.—The Lehman universal joint, set up to show operation,



YANKEE SILENT MUFFLER.
Exhaust escapes between edges of spring disks strung on pipe perforated with small holes.



COLUMBIA ACETYLENE GENERATOR.
Two Air Tubes Pass Through Square Water Tank to Prevent Overheating. The Cylindrical Container Holds the Carbide.

comprises the exhibit at this stand. This joint, which was illustrated in THE AUTOMOBILE of January 21, is made of case-hardened steel, and is so arranged that a

leather hood may be attached to keep out the dust. The joint is easily taken apart or assembled. While this device is really not yet on the market, it is now undergoing a series of tests by several manufacturers, with a view to its adoption in their machines.

Hussey Drop Forge & Mfg. Co., Cleveland, O.—A varied assortment of drop forgings, together with steering wheels, oil feeders, grease cups, brass couplings for water, gasoline or oil, oil pumps, and the like, are shown at this stand. An interesting feature of the exhibit is the Hussey steering gears with tilting wheel, and ignition and throttle levers on top of wheel, or on column, at option of purchaser.

New York Edison Co.—The exhibit of this concern is composed solely of several large electric light signs, calling attention to the availability of the Edison service for general automobile use.

Whitlock Coil Co., Hartford, Conn.—From the line of coolers and cooling devices shown by this company, it has well kept pace with the improvements in this branch of the trade. The Whitlock improved cellular cooler, as brought out this season, is of particularly fine finish, and is shown in several styles with many improvements in general design. The cooler is supplied with fan when so desired.

W. J. Duane & Co., New York.—Several full-sized models of both the Tourist and London auto-tops are to be seen at this stand. The company is making a specialty of its four-rib canopy extension top for side entrance cars. This is made of imported waterproof mackintosh, and furnished in any color desired.

Saks & Co., New York.—The exhibit of this concern consisted of a varied assortment of fur, leather and corduroy motoring garments for both men and women, waterproof robes, caps, goggles and other accessories. Among the many attractive garments in women's clothing was a full suit in white leather piped with brown trimming displayed on a model; a coat of sable heads, two to three thousand having been used in its manufacture, was also an object of much interest. A plaited chiffon hat, shirred around the edges and trimmed with rosettes of chiffon, and wings, was the most novel design shown in women's motoring headgear. This was fitted with two long chiffon streamers, fastened at the back, which are used as ties for holding the hat in place, no hatpin being required for this purpose. The hat is intended for street use or for motoring purposes, and is furnished in any color desired, and made of several different materials, including rubberized silk for rainy weather, straw and similar material for summer use.

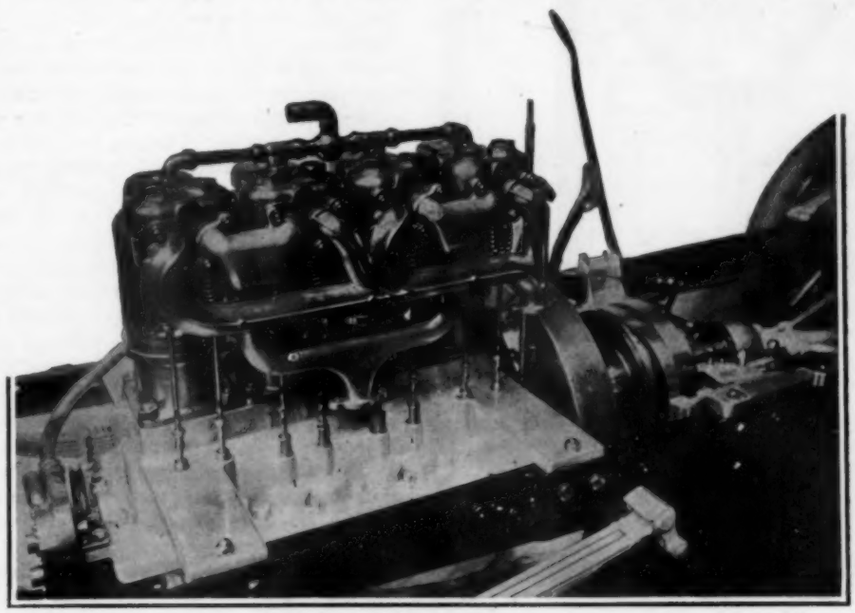
W. D. Custead, New York City.—This exhibit consisted of a transmission device, invented by the exhibitor, in which reciprocating rods, connected at one end to cranks, are provided with friction devices at the opposite ends for engaging with revolving drums on countershafts. As the rods move back and forth, they cause the drums to revolve by pushing during the forward stroke and releasing on the return. One rod is pushing while the other is on the return stroke, so that one is always pushing. By shifting a lever the length of stroke can be reduced or lengthened, and the speed of the drums and their shafts correspondingly changed. The device can be reversed at full speed.

C. F. Splitdorf, New York.—Everything for ignition was displayed by Mr. Splitdorf, but an entirely new device was a circular magneto, to be used without coil, and having the distributor self-contained. The device, which is nine inches in diameter by three inches thick, is made to slide onto the engine crankshaft in front of the motor, the shaft acting as armature shaft, and the armature turning at the same rate as the engine shaft. The starting handle goes on the shaft outside or in front of the magneto. The fields are inclosed by a heavy soft iron hoop, and the sides of the case are of aluminum, into one of which is cast the box for a distributor to the four plugs of a motor. Mr. Splitdorf says this is the coming thing, but that the "people are not ready for it yet." He showed his regular line of separable coils with hammer, tension, French and Charpentier types of vibrators. Carefully locked in a case was a hammer vibrator coil that Mr. Allen, Brooklyn agent for the Stevens-Duryea, had used steadily for 5,357 miles of traveling without repairs or replacements. The platinum points were not nearly worn out, and after the show the owner expected to put the coil back on his car.

Springfield Metal Body Co., Springfield, Mass.—A double phaeton-type body of aluminum, finished in canary yellow, trimmed with black, and fitted with four-bow extension Cape top, made an attractive exhibit at this stand. The company is now offering many pleasing styles of side entrance bodies, mostly made in aluminum only; but a few styles that have only straight curved seat backs, made either in aluminum or steel. There are also a few styles of rear-entrance bodies. The company also makes a specialty of folding canvas tops, of which three styles were shown—three and five-bow. They were all made in brown canvas or khaki cloth.

Warner Gear Co., Muncie, Ind.—Spur differential gears, with bevel and chain drive, were shown, complete and sectioned to show wide faces of internal pinions. The pinions are removable individually by unscrewing the bolts which form their shafts. The gears are complete without driving members, and can be put on axles and have bevel gears or sprocket fitted later. They are made in seven sizes for chain drive and six sizes for bevel drive, adapted for transmitting from engines of 2 to 40 horsepower. Warner worm and sector steering gears were also shown.

Jos. W. Jones, New York.—The Jones combination speedometer and odometer, shown connected by flexible metallic shafts to two auto wheels mounted on standards and driven by small electric motors, drew the attention of many visitors, both tradesmen and private owners of cars. Improvements for the year in these instruments consist in making the shaft and other parts heavier, to obviate fluctuations of the dial, and a pivotal attachment to the steering arm, which allows the spur driving gears to separate when an obstacle passes between them, as, for instance, a small pebble or twig of brush, without causing damage. In



MOTOR END OF CHASSIS OF 20 H. P. NEW FORD TOURING CAR.
Cylinders 4 1-4 by 5 Inches, Cast Separately and Fitted with Copper Nickeled Jackets. Inlet and Exhaust Side Showing Mechanically Operated Valves. Car Fitted with Planetary Two-speed and Reverse Gear.

a showcase at the back of the booth were shown Jones separate speedometers and trip odometers. The speedometers register the miles per hour by a moving hand or pointer actuated by centrifugal force acting on a device like a ball governor. The combined instrument is to be screwed to the dash, and registers both miles per hour and total mileage traveled up to 10,000 miles.

Morgan & Wright, Chicago.—As usual at bicycle and automobile shows, this firm had one of the largest spaces at the Garden for the exhibition of sundries, and, with its customary good taste and farsightedness, did not fill the space up with piles of tires and numerous samples of the tire accessories which it makes. Instead it was richly but tastefully furnished with rugs, chairs, tables and desk, and provided a comfortable resting place.

Demonstrators were on hand to show the facility with which the Dunlop perfected detachable tire can be taken off its rim and replaced, and to demonstrate a set of new tire tools. The latter comprises a removing lever, an attaching lever and a wheel brace. In use, the wheel is held stationary by resting one end of the brace against the ground and inserting the yoke in the other end under a spoke. The tapered end of the removing tool is then forced between the rim and edge of the tire, and the tapered end of the applying tool is inserted about six inches from it. Both tools are next drawn down half a foot, releasing the same length of tire edge. The applying tool is now removed and the removing lever reversed, so that the wider of the two flanges fits under the clincher edge of the tire. In this position it is quickly slid around the entire rim a foot at a time. The

CLINCHER TIRE TOOLS.
Designed to Lighten the Labor of Applying and Removing Clincher Tires.

wheel being revolved so that the tool is held nearly vertical, as each retaining bolt is passed it is pressed up, releasing the tire. In replacing the tire, the forked ends of the applying lever are hooked into the flange of the rim and turned up into vertical position. As it is passed around the rim the edge of the tire slips down into its place. The operation is extremely easy and brief. Thread fabric is an innovation in M. & W. tires, though not all are made from it. The line includes molded small single tires for crescent rims, larger sizes of clincher tires, inner tubes, pumps, patches, plugs, cement and practically everything that applies to tires.

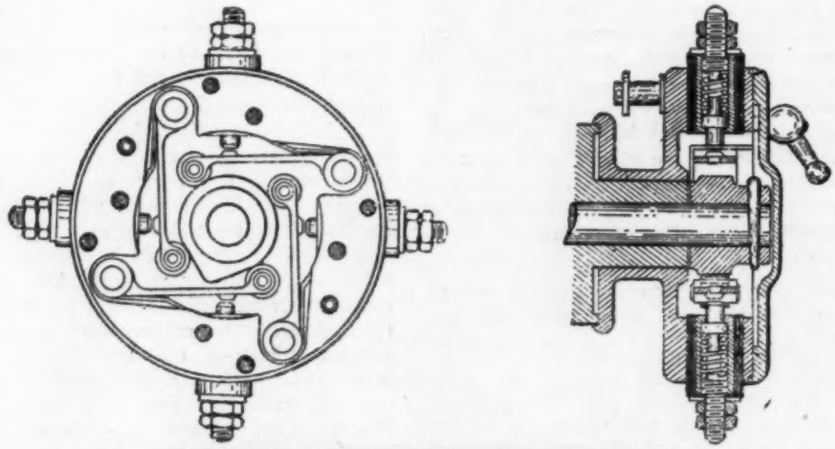
W. H. Cross, Brooklyn, N. Y.—Gilt Edge Metal Polish, in cans of all sizes from 1-4 pint to 1 gallon each, comprises this exhibit. The polish is manufactured by the exhibitor, and sold direct.

Pittsfield Spark Coil Co., Pittsfield, Mass.—The display embraced an attractive line of dashboard coils for one, two, three and four-cylinder engines, the new Pittsfield timer, Pittsfield battery switch with removable lever, Jewel spark plugs and other ignition apparatus. The coils are made separable, so that any one can be removed from the case without disturbing the others.

The new timer is made for any number of cylinders up to four. The case is aluminum and the working parts steel, the arms being of non-spring steel. Rollers in the ends of the arms are held against the central cam by coil springs in their pivot ends. Contact is made by the cam lifting each arm in turn into contact with its radial, spring-actuated contact point. The springs make a close contact, and the points are kept clean by a slight sliding motion. No screws are used in the construction of this timer.

Sprague Umbrella Co., Norwalk, O.—This exhibit is composed exclusively of automobile tops, showing styles in both open and closed models, with and without glass fronts. The company's specialty is its folding extension top, which, when fitted with glass front and side curtains, closes the car entirely, making it water and weather proof. When folded back this style top makes an excellent dust shield. Celluloid fronts are supplied in place of glass when so desired. The tops are easily folded back, or detached, patent button fastenings being used throughout.

Rose Mfg. Co., Philadelphia, Pa.—A patented reversible acetylene gas generator is the particular new feature of the Neverout

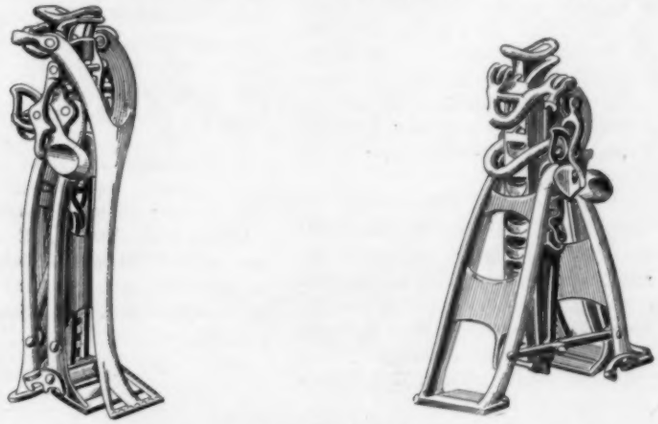


PITTSFIELD IGNITION TIMER FOR 4-CYLINDER MOTOR.
Plungers are Pressed Inward by Springs. Contact Arms Have Rollers to Prevent Wear of Cam.

lamp display, which embraced, in addition, upwards of eighty automobile lamps of all sorts. The generator has a polished brass rectangular water reservoir, with journals at each end to set in sockets in a bracket to be screwed onto the running board or side of the car. The reservoir can be revolved in this bracket and held in any desired position by wing nuts on hinged bolts. Passing transversely through the water chamber is a removable cylindrical two-pound carbide can, having a removable wire screen at one end and a removable cap at the other. Water is fed to the carbide from the sieve end, the sieve serving merely as a convenience in cleaning the carbide when refilling the lamp. When it is desired to stop generation the air-cock at the top of the tank is closed, the wing nuts loosened and the generator merely turned upside down in its sockets. This breaks the contact of the carbide lumps with the wet, decomposed carbide packed in the bottom of the chamber and shuts off the flow of water, thus immediately stopping generation. As soon as the generator is again reversed the dry carbide falls into contact with the wet, and generation begins at once. The generator is attractive in appearance, economical of carbide and easy to clean and refill without soiling the hands. The Rose Mfg. Co. has secured the sole American rights to manufacture it for automobile and all motor use, which includes autoboats.

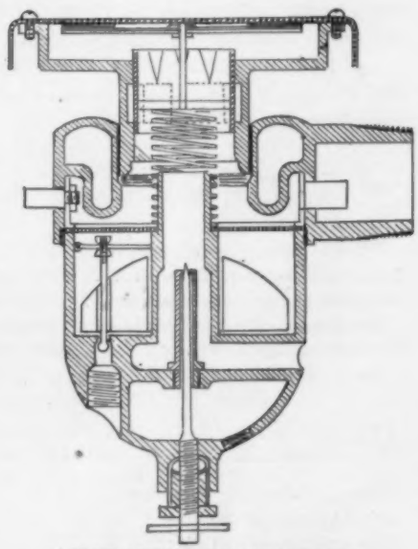
Fixed and swivel searchlights, with Mangin mirror lens and separate generators, and oil side lamps with double concave mirror lens are included in the Neverout line. The tail lamps are especially designed as to draft to meet the peculiar suction currents at the rear of the car.

Phineas Jones & Co., Newark, N. J.—This well-known firm of wheel makers exhibited a number of automobile artillery wheels in the white, built in both American and French styles. In addition to complete wheels samples of spokes and felloes were shown, suitable for the heaviest trucks, and also samples of parts for light runabout wheels.

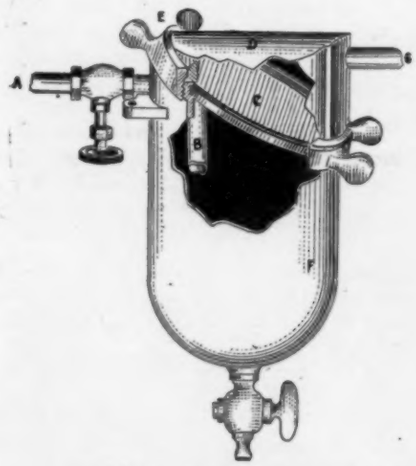


SEARLS FOLDING JACK CLOSED AND OPEN FOR USE.
The Jack is Opened and Locked in Position by a Single Motion. Can be Used Folded in a Restricted Space.

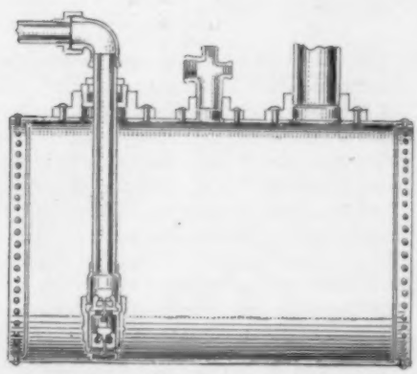
R. E. Dietz & Co., New York City.—A new feature in side lamps, especially notable here, was a combination gas and oil construction. It is made for separate generator and the burner can be taken out and an oil burner and wick interchanged almost instantly for the lava tip. There is a permanent, though removable, oil reservoir in the base of the lamp, and the careful driver is expected to keep this always filled. Then, when his carbide gives out, as it sometimes will, of a dark night, or if the generator gets out of order, the motorist can proceed with bright side lights. The Dietz company has also in process of manufacture a modification of this type of lamp, which it was unable to get out in time for the show. In this the gas and oil burners are permanently fitted in the lamp, the gas tip being in the focus of the reflector and the oil burner directly in front of it, but placed low enough so that it will not cast any shadow when the gas is lighted.



ACORN AUTOMATIC CARBURETER.
Heated by Exhaust or Hot Circulating Water to Assist Carburation. The Float is Annular.



GASOLINE PURIFIER FOR CAR.
A, Pipe to Gasoline Tank; B, Pipe Reaching Nearly to Bottom of Gasoline Chamber; C, Chamois Strainer; G, Pipe to Carbureter. Sediment and Water are Drained Out Through Cock in Bottom.



BOWSER UNDERGROUND GASOLINE TANK.
Showing Foot Valves to Keep Pipe Leading to Pump Full of Fuel.

In generators the company showed one with "basket" carbide chamber. The generating chamber is divided across the middle by a galvanized wire screen. The calcium carbide is placed in the upper half of this cylindrical case, and as decomposition proceeds the ashes are shaken down through the sieve by vibration, so that the carbide lumps are always clean and vulnerable to the attack of the water fed from the square outside tank through a tube and needle valve from above. The gas, on its way to the burner, passes through an absorbent cotton filter which cleans and dries it. There is also provided a coil spring safety valve to relieve pressure in the generator if it should become so excessive as to threaten to burst the reservoir.

A large and varied line of barrel-shaped gas searchlights, with mirror lens reflectors, open at back to facilitate polishing of reflector, fitted with solid or shifting brackets; bullet-shaped headlights with bluntly formed rear ends, double-seamed and riveted joints, with bracket sockets reinforced inside the lamp by steel plates; gas lamps with self-contained and separate generators; and oil tail lights comprised a handsome display.

Special attention was called to the downdraft feature in construction of the tail lamps, which are made in small and large sizes. A careful study has evidently been made of the draft problem, as the peculiar suction draft at the rear of a car will extinguish a light much quicker than a head wind at the front of the car.

PROPOSED LIGHTING LAW.

If a bill now pending before the Massachusetts Legislature becomes law, every person in that State using "a bicycle, carriage or vehicle propelled by muscular power other than vehicles used for the transportation of merchandise and farm produce" will be compelled to display a light from one hour after sunset to one hour before sunrise, visible at least 300 feet from the front and rear of the vehicle. For vialotions of the provisions of the proposed statute, a fine of $10 is provided for the first offence and of $20 each for subsequent offences, the fines to be applied in the maintenance of the highways of the town where the offence was committed. The bill was framed by Richard P. Elliott, a lawyer, of 53 State street, Boston, and has already been introduced in the Senate. A hearing was set for January 26 before the Committee of Highways and Bridges of the House and Senate.

Auto-boat owners in Chicago have formed a club, and will hold races on Lake Michigan during the coming spring and summer. As there are many such boats owned by Chicago men, lively sport is anticipated.

The English Dunlop Tire Co. has issued an accountant's certificate to the effect that over a million and a half of tires were made by the company during the twelve months ending September last.

Tendencies Exhibited at the Paris Show.

Special Correspondence.

PARIS, Jan. 13.—Statistics have always been known to be extra-dry literature, and the writer himself does not find them very much to his taste, but there are circumstances when no apologies are necessary to make them accepted; that is, when they show interesting tendencies and the progress of any branch of human industry.

Before closing definitively the accounts of the Paris show, it may be well to balance the situation with a few figures, the same as any business man will figure out his transactions after a big deal.

Percentages of Engine Cylinders.

As was expected, the number of four-cylinder engines is rapidly increasing every year.

There were 266 types of machines shown; that is, not 266 individual machines, but distinct types, makers often showing several machines of the same type; for instance, a chassis and one or several complete cars, or chassis without the mechanism, but with the body.

Among those who make their own engines, or who make engines exclusively, one finds the following official figures:

Relative Percentage of Cylinders.

Number of Cylinders.	1902 Per Cent.	1903 Per Cent.	1904 Per Cent.
1	12	15	6
2	37	26	15
3	2	4	3
4	48	55	76
6	One maker only.		

If we now consider the entire show, we find that the addition of the firms who assemble cars, but buy their engines, alters these figures, which become:

Number of Cylinders.	Per cent.
1	9
2	6
3	8
4	72
More than 4	5

The large discrepancy between these figures comes from different facts:

(1) Most assemblers use single-cylinder engines, bought from people like De Dion and Aster.

(2) In the first statistics are included both engine and car makers, while in the second car makers alone are considered.

(3) The three-cylinder engines are in most cases no longer built, but there are still a good many in stock, which assemblers buy, but which the makers did not exhibit.

Percentages of Engine Horsepowers.

If we now consider the power of the engines shown, the figures become:

Horsepowers.	Per cent.
Up to 8	7
8 to 20	37
Above 20	56

These figures, having been taken under the same conditions as the second table, show that below 8-horsepower some of the engines—two-ninths of the total number—are of more than two cylinders; in fact, we find there one 3-cylinder and two 4-cylinder engines, the rest of the two-ninths being 2-cylinder engines.

The first table was taken for vertical engines exclusively, there being only two makes of horizontal engines and one of inclined engines, making together a little over one per cent. of the total number of engines. They are: Horizontal engines, Wolseley and Oldsmobile; inclined, Motobloc.

In a different class, not included in any of our statistics, are found:

Commercial vehicles, single-cylinder horizontal engine—Gillet-Forrest.

Motor boats, double inclined engines, V-shape—Ader. (Also making vertical cylinders.)

Number of Main Bearings.

In the matter of construction, some interesting figures are found:

	Per cent.
Four cylinders separately cast, with bearing between each cylinder	32
With two cylinders between each bearing	3½
Four cylinders cast in pairs	64½

The considerations which lead the makers in these two different ways are a cause of active controversy over here.

The adherents of five bearings claim that the crankshaft is better supported and cannot bend, even temporarily, under the stress of the explosion; that the boring of the cylinders is easier and surer as to the evenness of wall thickness, and that the water circulation is better assured. These makers include, among others, Panhard, C. G. V., Clement and de Dion. The other makers, who defend the cylinders cast in pairs, say that these bearings are easier to bore and adjust properly in line than five; that the water-jacket is made larger, and that, consequently, the sand core can better be cleaned out at the foundry; that the piping is much simpler; that the whole construction is lighter, unless copper jackets are used, and also that an engine so built is considerably cheaper to make. Among these are found De Dietrich, Brasier and Renault.

Percentages and Types of Valves.

The mechanical valve has definitively won the market. We find:

	Per cent.
1—Mechanical valves on opposite sides of the cylinders with two separate camshafts	65
2—Mechanical valves on same side as exhaust, with single camshaft	23
3—Mechanical valves on top of cylinder, with tappet	7
4—Automatic inlet valves	5

One special instance falls under the third case of the above table, that of the Pipe car, in which both inlet and exhaust valves are set at an angle of 90 degrees on top of the cylinder head.

Governing Devices.

If we consider the means of governing, we find:

	Per cent.
Inlet governing by throttle	50
Inlet governing by valve-lift variation	46
Exhaust governing (always by valve lift variation)	4

If we consider the means of relieving the compression for starting the engine, we find approximately:

	Per cent.
Relief by special cam on exhaust	15
Relief by compressor tap	80
Relief by inlet lift	5

Marked Changes in Ignition.

Passing now to the ignition, the change over the preceding years is startling, the new high tension magneto having fairly upset things, which now stand, if taken in the same conditions as in the first table:

	1902 Per Cent.	1903 Per Cent.	1904 Per Cent.
Make and break by magneto	22	22	26
High tension by magneto	0	6	23
Dry or storage batteries	74	72	19
Double ignition (make and break magneto and batteries)	—	—	6
Double ignition (high-tension magneto and batteries)	—	—	26
Burners	3	—	0
Catalytic and others	1	one case only	0

The dashes indicate that the proportion was not taken; it does not mean that there were no cases shown; there may have been, but very few.

In this year's show there were two instances of make and break by electro magnets screwing on the cylinder head (Bullock type), but they were not shown on engines by engine makers, and consequently do not find place in the above table.

If we classify the machines in a similar manner to that used in the second table we find:

	Per cent.
Dry or storage batteries	16
Make and break (magneto)	36
High-tension (magneto)	44
Miscellaneous	4

The double ignition having there been divided and classified with the proper class of its components, double ignition by batteries and make-and-break magneto would go as a half to battery and a half to make-and-break magneto. Figures had been given during the show by other papers stating that the make-and-break magneto was in excess of the high-tension. These were erroneous, the new type of magneto being, when engine makers alone are considered, on almost exactly 50 per cent. of the motors.

This rapid progress of a relatively new device means much for it.

Statistics of Water Cooling.

	Per cent.
Thermo syphon or natural circulation	14
Pump	86
Steam generating and condensing	None

The latter type, which required a horizontal cylinder below the radiator (old de Dietrich and Gillet-Forest) disappeared with this type of engine.

As to radiators, although the honeycomb is on a decline, it has been improved and holds its own on expensive cars as follows:

	Per cent.
Honeycomb	53
Ribs brazed on union plates	35
Ordinary ribs on bent tubes	12

We also find in the tank and radiator construction:

	Per cent.
Water tank and radiator combined	78
Separate water tank	22

In the first instance, 12 per cent. of the cars have a reduced size spare tank fitted.

The Figures on Fans.

Among these radiators, we find that some are traversed by a forced draught as follows:

	Per cent.
Fan behind the radiator carried by the radiator	20
Fan behind the radiator carried by engine or special brackets from frame	52
Fan cast into the flywheel	18
Both radiator and flywheel fan combined	10

Amongst the radiator fans one finds:

Method of driving.	Per cent.
Chain	5
Gear	3
Belt with provision for adjusting belt tension	28
Belt with automatic belt tension adjuster	17
Belt with belt tension adjusted by varying belt length	47

Details of Chassis Statistics.

If we now come to the chassis frame we find:

	Per cent. 1903.	Per cent. 1904.
Pressed steel frames	46	79
Armored wood	32	16
Tubular	11	5
Angle steel	11	

Classifying the chassis in a different way we find:

	Per cent.
Chassis with parts attached direct to side members	33
Chassis with tubular sub-frame	14
Chassis with pressed steel sub-frame	32
Chassis of angle steel sub-frame	21

Sixty per cent., approximately, of the frames this year were with narrowed front, the straight frames being only found on cheaper cars, while 15 per cent. amongst the most expensive were with raised rear, while 23 per cent. had the rear transverse spring.

Cardan and Clutch Figures.

The fight between the cardan and chain drive is now solved in favor of the cardan, since we find:

	Per cent.
Propeller shaft drive	52
Side chain drive	46
Single chain drive	1½
Expanding pulley and belt	½

If we now consider the clutches we take some of the figures on these from rough estimates, as the last case is very hard to discuss:

	Per cent.
Direct cone into flywheel	60
Reversed cone	15
Miscellaneous types:	
Expanding, friction plates, etc.	25

Types and Make of Brakes.

To close this perhaps too dry study we will go a little fully into the brake question, giving a digest of a very full and complete study of M. Lucien Perine on the subject.

Seventy-six makes of cars were examined, making 149 different types of brakes. Amongst these eight makers, or 10 per cent., have provided a third brake, besides the two usual ones on the chassis. They are to be found on high price cars or cars meant for heavy touring in mountain districts. If the 149 types mentioned above are compared with the 130 shown last year, according to the Touring Club of France, we find as to friction materials:

	Per cent. 1903.	Per cent. 1904.
Steel on steel	33	30
Cast iron on steel	26	36
Bronze on steel	17	27
Camel-hair on steel	14	5
Miscellaneous	10	2

It will be seen that one of the surfaces always, or nearly so, steel, this on account of its being most always the hub drum or a drum keyed on the propeller shaft. Cast iron on steel seems to have the favor, although the line between cast iron and some of the cast steels used is very hard to draw, these steels being so rich in carbon and so soft that the difference is almost imperceptible. In such cases all the brakes in which the band was made of distinct segments jointed together were classed as cast iron and those in which a single band generally ribbed for cooling is used were classed as steel.

Five makers, or 7 per cent. of the total, have used water-cooled brakes.

If we now consider separately the wheel and the transmission brakes, we find:

Wheel brakes.	Per cent.	Per cent.
Internal	82	Enclosed 58 Exposed 24
External	18	All exposed

Concerning the compensation of the wheel brakes we have:

	Per cent.
Makers compensating by cable and pulley	38
Makers compensating by balance-beam	15
Makers where no automatic compensation is fitted	47

Three makers have suppressed the transmission brake and placed it on the wheels, one placing them both external, one placing them both internal, the other placing them one internal and the other external, all on the same drums.

Concerning the transmission brake we find:

	Per cent.
External	79
Internal	21

and as to their position:

	Per cent.
On change speed primary shaft	44
On differential countershaft	48
On rear axle	7
On clutch (Chenard-Walcker)	1

Coming back to the comparison between the different friction surfaces we will obtain more details:

	Wheel Brakes. Per c't.	Transmission Brakes. Per c't.	Totals. Per c't.
Steel on steel	34	26	30
Cast iron on steel.	24	48	36
Bronze on steel	29	25	27
Camel-hair on steel.	10	1	5
Brass or copper on steel	3	0	2

This is of considerable importance, as it shows how universally appreciated the metal brakes are and how important brake improvements have become as the power of the engines has increased, and how soft materials, such as bronze and cast iron, have made their way by being perfectly progressive in action and by being less liable to cutting or seizing.

Manila, Jan. 19.—General Corbin took a moonlight ride in his auto along the Luneta to-night. Names of soldiers killed by the Samar insurgents will be forwarded by mail.—*Commercial,* Pine Bluff, Ark.

American automobilists who think they are badly treated by the administrators of the law should imagine themselves in the place of a Frenchman who was recently arrested and fined for driving an automobile without a license when, as was proved, he had never owned an automobile and was, at the time the offense was said to have been committed, taking a trip in an auto boat.

FOREIGN

Gordon Bennett Wrangle.

Special Correspondence.

PARIS, January 13.—Although the regulations for the Gordon Bennett and the Grand Prix race have not yet been officially announced, the decision of yesterday's meeting having been kept secret, the outline of these regulations can with safety be predicted. The Grand Prix of the Automobile Club of France will be run at the same time as the Gordon Bennett race, the first fifteen cars in the *eliminatoires* representing France. A $2,000 entrance fee will be charged for the French *eliminatoires*, and this will include entrance to the Gordon Bennett race and the Grand Prix. Thus French cars will really pay no entrance fee for the Gordon Bennett race.

Foreign cars entering for the Grand Prix will each pay an entrance fee of $1,000. Entrance to the Grand Prix will be by invitation, these being sent out to the different foreign automobile clubs and distributed by them amongst the automobile builders of their respective countries. No make of car can be represented in the Grand Prix by more than three vehicles, and each foreign automobile club must select the cars which are to represent it. The two races will be run together, the automobiles entered for the Gordon Bennett race being started first. Should the car having the fastest time in the race not be entered for the Grand Prix, it will not be considered as the winner.

The following will doubtless be the representation in the two races: France, fifteen; America, three; England, six; Germany, six; Italy, three; Switzerland, three; Austria, three; Belgium, three. This gives a total of forty-two cars for the two contests, twenty-one taking part in each, seven nations being represented by three cars each in the Gordon Bennett, and four nations in the Grand Prix. The date of the race is not yet fixed, but it is very probable that the first week in July will be chosen.

Two Novel Machines.

Special Correspondence.

PARIS, January 12.—Two very interesting applications of the internal combustion engine were on view in the Serres or greenhouses on the banks of the River Seine during the Paris show, one a gasoline road roller and the other an automobile power plant. The Serres, as has already been reported, took the overflow from the Grand Palais, and contained exhibits that appealed more especially to the practical man.

The Laffly road roller is a miniature of the well-known heavy steam machine used by contractors, and it is intended especially for the use of clubs or private owners in maintaining private roads or for rolling golf links, lawns, grass tennis courts, or the like. A machine of sufficient weight for the former purpose would be quite too heavy for the latter, and this is ingeniously provided for in the construction.

In exterior form the roller is not unlike a locomotive, having a horizontal cylinder, or barrel, about 6 feet in length and behind this a cab containing the power plant. The body is supported on a roller in front about 4 feet wide and on side driving wheels with 14-inch faces. The front roller is a trifle wider than the distance between the rear wheels, so that when in operation the machine rolls along a path about 6 feet wide. Steering is from a vertical wheel similar to a boat wheel, connected by a heavy round link chain to a fifth wheel above the front roller.

The motive power is derived from a 8-horsepower gasoline motor, installed vertically in the left-hand front corner of the cab. This is geared to a rear live axle which passes through the cab, the gears having diameters varying from four to twenty inches, and in all cases two inches face of tooth. The gasoline tank and the oilers are conveniently placed in the cab.

The horizontal cylinder, or barrel, which connects the cab with the front roller, is peculiarly built up. It is open at both ends, but the walls are made of three separate sheets of plate steel, separated from one another circumferentially by spaces of 2 inches. The two outer ones form between themselves a water tank and radiator at the same time; the entire outside and inside circumferences of the tank being used for cooling purposes. The inner cylinder is used as a carrier for weighting the machine when it is desired to use it on roads. When light the machine is about the right weight for use on lawns.

AN AUTOMOBILE POWER PLANT.

The automobile power plant is exhibited by Alrig, and is a complete gas generating and power-producing plant on four road wheels, which can be used for traction or for driving agricultural machines, or for mining or any other purpose where a portable or traction steam engine might now be used.

The gas generating apparatus is installed to produce water gas from anthracite coal in the usual way, the gas being washed and dried before it is used in the 12-horsepower vertical gas engine with which the machine is equipped. This engine is of the usual stationary type, and drives the machine on the road through an ordinary clutch and gear. When the machine has arrived at the point of operations, the clutch is disengaged and the flywheels of the engine are used as driving pulleys for belts. A flat, shallow tank, supported by pillars, serves as a roof for the entire machine, and, being open on the top, gives a large surface for the cooling of the engine circulation water. The running cost of the machine when developing full power is guaranteed by the manufacturers not to exceed 5 cents an hour, figuring the cost of coal and oil at ordinary market rates.

A strong claim for the economy of the machine is made by the fact that it requires very little attention after being started in operation. The plant displayed in the show was left running all day long without any other attendance than that of a workman who came for a few minutes at long intervals to see that everything was in order and to supply additional fuel to the gas generator.

The London Show.

Special Correspondence.

LONDON, January 13.—The third annual automobile exhibition of the English Society of Motor Manufacturers and Traders will be held at the Olympia Hall, London, from February 10 to 18. This will undoubtedly be the finest motor show ever held in England, and will perhaps rival the late Paris show in the matter of extent and comfort. The building is 450 feet in length by 250 feet in breadth, with the addition of a large gallery some 40 feet wide, which extends round the hall. Over 250 exhibitors have already taken stands, and a thoroughly representative exhibition is assured. As at Paris, a separate building a short distance away will contain the motor-boat and heavy wagon exhibits.

English shows of lesser importance will be held at the Crystal Palace, London, from January 27 to February 4, while Cordingley's exhibition will be at the Agricultural Hall, London, from March 18 to 25.

Belgian Auto Show.

Special Correspondence.

PARIS, January 13.—To-morrow, January 14, the fourth annual Belgian Automobile Salon will be opened under the patronage of the royal family, in the Cinquantenaire Park at Brussels, and will remain open until January 26. The preparations are in an advanced state, and for decorations and general beauty this year's Salon will surpass all previous gatherings; the presence of the King at the opening ceremony will add much to the importance of the gathering. There are 192 stands in the show, nearly one hundred of which are automobile stands. All the Belgian firms are represented, and French builders are very prominent, in many cases the cars being the same as those shown at the Paris Salon last month. America is represented by one firm—the Oldsmobile; and the Decauville, which in France is sometimes looked upon as an American concern, has a large exhibit.

One of the features of the Salon is an exhibition of automobile challenge cups, for which a room has been specially set apart. During the day the cups are carefully guarded, and at night are locked up in a strong safe. Various automobile clubs have been invited to lend the cups which they hold, full guarantee being given for their safe return. Another novelty of the Salon is to be an exhibition of racing automobiles

victorious in important contests. These will include Heath's Panhard-Levassor, winner in the Ardennes circuit and in the Vanderbilt race; the Clement car, also a winner in the same events; the Mors car belonging to Gabriel, and the Richard Brasier, with which Théry won the Gordon Bennett cup for France last year.

Machine Tool Exhibit.

Special Correspondence.

PARIS, January 12.—It is a curious fact that the leadership of the French in automobile construction has been made possible largely by the use of American machinery, with which the great factories here are almost exclusively fitted. At the recent automobile Salon, while American cars in the Grand Palais were few in number, American machine tools for the construction of automobiles were more numerous in the exhibition in the Serres than those of any other nation. Such builders as the Cincinnati Milling Machine Co., the Cincinnati Shapers, the Cincinnati Machine Tool Co., Hendey Norton, Gisholt Machine Co., Cleveland Automatic Machine Co., Landis Tool Co., Starrett, and the Norton Emery Wheel Co., displayed many interesting types that attracted crowds of engineers and designers during the show.

The Gisholt Machine Co. showed a rapid turret lathe doing very fast work on motorcycle engine cylinders of very difficult type, boring and cutting valve guides and seats, turning up the lower part of the cylinder to the lowest rib, and threading the central hole on top of the head, the complete cylinder being finished from the casting in one operation.

Among the machines shown by the other American firms, which met with a great deal of attention, were a crankshaft grinder, a number of milling machines, and several gear cutting machines, both spur and bevel.

Germany showed several machine tools of the American type. The importers of American machinery have found in the past few years that the German machines, although inferior in almost every case, do a lot of harm to the trade on account of the way in which they spoil the prices. The most interesting of the German machines shown, with the exception of the fully automatic screw cutting machines, were a cam cutter from a model, and an upright cylinder lapping machine by means of an emery wheel on an eccentric spindle.

England's most noticeable machines were in the class of lathes and bevel gear cutters, their characteristics being their massive and unelegant design. The most remarkable English machine was a lathe using the Crucible Steel Co. of America's "Bullet" cutting steel, which showed wonderful speed.

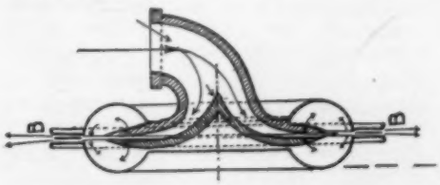
The French machines did not have much to distinguish them from others. The Panhard & Levassor exhibit, however, was especially interesting on account of the name this firm has made in the automobile world. They showed their usual woodworking machinery, artillery wheel spoke lathe and wheel assembling machine, and upheld their reputation in the line of bandsaw machines by an imposing array, the most interesting of these being one for cutting out crankshafts from solid forged slabs.

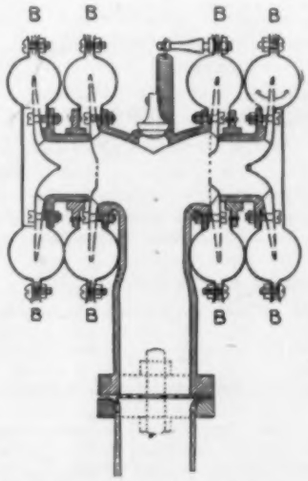
Efficient Mufflers.

Special Correspondence.

PARIS, January 12.—In the parts exhibit in the Serres at the recent Salon there were a number of mufflers shown, most of which apparently followed the old hard and fast rule that the noise-reducing capacity of a muffler was in direct proportion to the amount of back pressure set up.

Two of these apparatuses, however, were shown in operation. By actual measurement of the output of dynamos driven by engines on which the mufflers were fitted their efficiency was very great, there being practically no difference in output of the dynamos when the engines were working with free exhaust or with exhaust through the muffler, while their silencing properties were remarkable considering their light weight and simplicity. The drawings are sectional views of these mufflers, which are named the Pichard and the Clair.

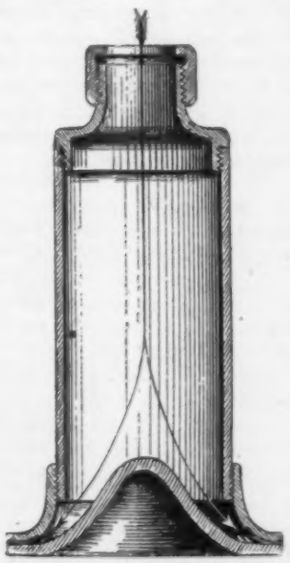


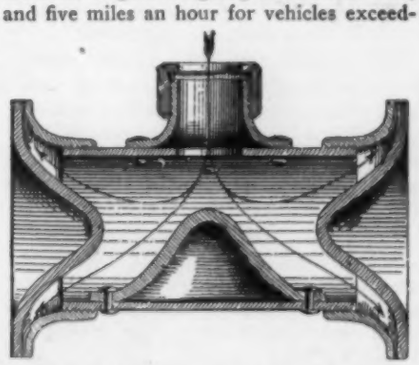


CLAIR MUFFLER WITH CORRUGATED RINGS BETWEEN WHICH GASES ESCAPE.

In these mufflers the gases, after having been deflected on a suitably shaped curved cone, are sent to the atmosphere through very narrow passages of great length.

Both of the mufflers are made in only two diameters, the allowance for increased engine size being made by multiplying the number of outlet circles. In the Clair the exhaust escapes through the radial holes formed by a thin steel plate ring, radially corrugated and squeezed at *B* between the two halves of the casing. In the Pichard the result is obtained by cutting very narrow slots of a specially designed curved shaped in one of the halves, or on the intermediary rings when the number of slots is to be increased.





PICHARD MUFFLER WITH CONICAL DEFLECTOR AND RADIAL SLOTS FOR EXHAUST.

Motor Truck Rules.

Special Correspondence.

LONDON, Jan. 12.—Motor vehicles for heavy traffic have been granted a new lease of life by the regulations just issued by the Local Government Board. The tare weight is increased from three to five tons, and a trailer may be towed, provided that the unladen weight of the tractor and trailer combined does not exceed six and one-half tons. For wagons with rubber or other elastic tires, a speed limit of twelve miles per hour is fixed, while for those with iron tires a limit of eight miles an hour is fixed for wagons weighing under three tons, and five miles an hour for vehicles exceeding this weight. The new regulations have been well received by English manufacturers of steam and gasoline wagons, and will cause a big development in this branch of the automobile industry.

THE AUTOMOBILE

VOL. XII. No. 4

Published every Saturday by
THE CLASS JOURNAL CO.,
Flatiron Building, Madison Square,
NEW YORK CITY.

Cable Address - - - - Autoland, New York
Long Distance Telephone - 300 Gramercy, New York

SUBSCRIPTION RATES:

United States, Canada and Mexico, - One Year, $2.00
Other Countries in Postal Union, - One Year, $3.00

To Subscribers—Do not send money by ordinary mail. Remit by Draft, Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Iliffe & Sons, Limited, 3 St. Bride Street, Ludgate Circus, London, E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

To Advertisers—Copy or changes in orders for advertisements should reach us not later than 5 o'clock p. m. Monday for the issue of Saturday following.

Copyright, 1905, by The Class Journal Company.

Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly).

Copies Printed in 1904, - - -	**639,300**
" " This Issue, - -	**13,500**
" " Since Jan. 1, -	**58,700**

The Opening at Ormond. The good fortune in the matter of weather which marked the show week has followed the southward course of automobiling and the enjoyment of the Florida contingent will naturally be intensified by the news of what they have escaped in the North, a cold gale, deep snow, and later the record cold wave of the season. Apart from the grateful change to a warmer climate, the winter meet promises to be of even greater importance this year than last, as the possibilities of this natural racing course are more generally appreciated.

The long level stretch of hard sand, swept and rolled by the ocean twice every day, with no road crossings, no railway tracks, and no need of oiling, compares most favorably with the best road courses in America and Europe. The gathering of competitors and spectators is this year larger in point of numbers and more international in character, and the program of events is long and varied, attracting every class of car. In addition to the trade representatives who are directly interested in the favorable showing of their cars, the gathering includes an unusually large number of gentlemen amateurs, all keenly intent on the further cutting of records.

While the continued clipping of seconds, and even fifths, from the established records is the main object of the meeting and the performance of the big cars and ownership of the more costly trophies will naturally attract the public attention, these features are by no means the vital ones. The chief benefit to the industry, and to the public as well, comes from the less sensational competitions of the stock cars under price classification. While neither built nor bought for racing, the thorough test to which the construction of these cars is subjected in the races will be of value to the makers, and will naturally be accepted by buyers as satisfactory guarantees of material and workmanship and of reliability in ordinary road use. The future of record racing must shape itself, and it is probable that the racing machine of unlimited power may disappear naturally before many years, but there will always be a place for automobile racing under reasonable rules and restrictions.

The events of the first day were of comparatively small importance, except for the performance of the Napier car handled by McDonald; these newcomers at Ormond started in by a cut of eleven seconds from the five-mile record established by Mr. Vanderbilt. The combination of Scotch driver and English car adds a new element on the international side.

✷

Automobiles on Ferryboats. The new bill now before Congress, as published on another page, seems to meet existing conditions and to be perfectly fair to the automobile. Under its provisions cars using gasoline as fuel—there being no distinction made between steam and the explosion motor—may be run on board a boat under their own power, the only proviso being that all fire must be extinguished before the boat leaves her slip or pier. Similarly, the fire may be relighted before the car leaves the boat, providing that such relighting is done only after the boat has entered the slip. It is to be hoped that the bill will pass in its present form, as such a law will be welcomed alike by motorists and by the ferry companies.

✷

New York Importers' Salon. The exhibit of foreign cars which closed on Tuesday last at the Herald Square Exhibition Hall has attracted much attention, in spite of the rivalry of the American Show at the Garden. The cars themselves, all of high price, were not of a kind to attract the general public, but the exhibition has been well patronized by those well able to indulge in such costly luxuries, and the exhibitors express themselves as fully satisfied with the amount of sales made during the two weeks. Incidentally, the show has afforded an exceptional opportunity for the study of the best foreign work, the chassis on view were those prepared for the Paris Show, and the best of the European body-makers were represented. Owing to the excellent lighting of the hall and the comparatively small attendance throughout the day, every facility was afforded for a critical examination.

The reports of the show, necessarily written during the first week, failed to do justice to it, a large proportion of the exhibits being delayed in shipment, and only arriving for the second week. Among the important late additions were a Mors, Clement-Bayard and Gobron-Brillie chassis, the latter with a type of motor little known here, the explosion taking place between two pistons moving in opposite directions in the same cylinder. Many new cars were also added, the Darracq and Clement-Bayard exhibits taking shape only after the first week. He would be a bold prophet who would attempt to forecast the show situation in New York in 1906, but it seems probable that whatever else may happen, the importers will repeat the present experiment.

✷

Gordon Bennett Cup in France. The changes recently made in the actual conditions of the Gordon Bennett cup by the Automobile Club of France are such as to place this famous international trophy upon an entirely different basis from that which it has occupied for the past two years. As they inevitably tend to diminish its importance, they have aroused some adverse comment, especially in England.

There has existed for some time on the part of the French manufacturers a serious dissatisfaction with the conditions under which the cup is held, three representatives only being allowed to each nation. Under this regulation France, with her many makers and enormous financial interests in the industry, is on the same footing in the race itself as Belgium, Switzerland and other countries in which the industry is represented by but one or two firms. It is true that this side of the case is partly offset by the assumption that the three cars selected in the French eliminatory trials from a score or more of competitors represent a far higher degree of excellence than any three cars turned out in another country, and perhaps by one firm, but this is not considered by French makers as a sufficient compensation.

Voicing a general sentiment, the French paper *Les Sports* recently called a meeting of eight of the representatives of the leading French makers, which was followed by a still larger meeting of the trade. As the result of these two meetings, the matter has been taken up very actively by the Automobile Club of France.

It was impossible to immediately alter the deed of trust under which the cup was held, but other means were found to effect the desired end; it was soon arranged to establish an international trophy under the name of the Grand Prize of the Automobile Club of France, this race to be run concurrently with the Gordon Bennett contest and to be open to all comers without limitation of number. For the future, the A. C. de F.

further decided that it will hold an annual open race for this prize, and that after the present year it will not take part in the Gordon Bennett cup race under the existing deed of trust.

As long as it remains in France, the Gordon Bennett cup must occupy a secondary position; what the result will be in the event of its capture by another nation is a matter of doubt, and also what the future of the new French prize may be from an international standpoint. Should the cup be won by England, Germany or America, it might continue under the present deed as a formidable rival to other would-be world's trophies.

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Apropos of the report of the annual meeting of the N. A. A. M. in the last issue of THE AUTOMOBILE, we are informed by Mr. G. W. Bennett that his question to President White was answered in the negative, and not in the affirmative. The question was whether any or all of the show committee had been cognizant of the arrangement for leasing Madison Square Garden made by the Licensed Association, as stated in the papers? President White's reply, as given by Mr. Bennett, was in substance that personally he had no knowledge of the lease until he arrived in New York a few days before.

While our report came from authentic sources, the above statement must be accepted as correct.

✷

We have all become so accustomed to talking about Cannstatt and the Cannstatt Mercedes, that it is a little difficult to realize that that town is no longer the home of the Daimler Motoren Gesellschaft. After the disastrous fire in 1903, which destroyed a large part of the Cannstatt factory and contents—and which resulted in the Irish Gordon Bennett race being won by Jenaltzy, with a stock 60-horsepower car, belonging to Clarence Gray Dinsmore, instead of one of the 90-horsepower racers then partly completed—the company decided to rebuild, not on the original site, but about a mile further from Stuttgart (of which Cannstatt is a suburb), at Unterturkheim, which is reached by trolley from Stuttgart, passing through Cannstatt.

The portion of the original factory which escaped the fire, is still used, but will shortly be abandoned and the entire business concentrated at the new site. So, the original and true Mercedes is no longer the "Cannstatt Mercedes," but the "Unterturkheim Mercedes."

A movement is on foot among people interested to have some automobile legislation at this session of the General Assembly of Delaware, but just what it will be has not yet been determined. Some machine owners will probably frame a bill for the protection of automobiling in the state.

Auto Show Opens in Philadelphia.

Most Successful Ever Held in the Quaker City—Floor Space Insufficient for Accommodation of Exhibitors.

Special Correspondence.

PHILADELPHIA, Jan. 23.—One thing the managers of the present exhibition of the Automobile Trades' Association of Philadelphia have learned as a result of their experiences during the past twenty-four hours, and that is never again to schedule a show immediately following a national exhibition. After making elaborate preparations with the railroads and exhibitors to ship the exhibits from Jersey City on Sunday morning, through some one's fault the special freight train carrying them did not reach the Reading freight yard at Thirteenth and Callowhill streets till almost midnight. Systematic questioning of the exhibitors, however, would seem to indicate that the blame should be equally divided between the Reading and the exhibitors. Some of the latter say they had their "stuff" at Jersey City in ample time, but that the railroad had no cars on hand. Others admit that the week of the Madison Square Garden Show was so strenuous that they took advantage of the fact that it was Sunday to lay in a stock of sleep for Quaker week.

Suffice it to say, that at 11 o'clock, the hour announced for the opening, confusion reigned supreme. Fully half of the exhibits had not been installed. Many of the electric signs which had been used for decorating booths at the New York Show were lost in the shuffle; and when they did arrive it was in a bunch, and then everyone wanted an electrician or two and at once.

It looked like a hopeless task to have the show in any kind of shape for the big crowd sure to be present on the opening night. But by heroic work and calling in reinforcements 8 o'clock saw order restored. Then exhibitors hastened to home or hotel to eat a bite and change their clothes. They were tired but happy, for never had such exasperating obstacles been overcome in such a comparatively short space of time. Despite the fact that the show was in no condition during the afternoon for the inspection of visitors, many hundreds paid the admission price to stand around the chilly Armory and watch the army of carpenters, electricians and upholsterers at work—an indication that in the matter of admissions the present show will far outrival any previous affair of the kind held in this city.

SHOW HAS OUTGROWN BUILDING.

The present show has also demonstrated that the local automobile business has far outgrown any building located anywhere near the business section. Despite the fact that dilatory applicants almost begged for some kind of exhibition accommodations, the management was compelled to turn them down; but only after every company and officers' room on the first floor, and even the corridors leading thereto, had been utilized for exhibition purposes. Fortunately the cellar was out of the question; otherwise it is quite likely that some of the more clamorous of the belated applicants would have established themselves there. Some few of the smaller exhibitors were fortunate enough to induce those already installed to squeeze a little closer together and make room for a desk, a table and a chair. Having found a resting place, the next thing was to secure a painter to make a sign the size of the space to indicate who and what were located there. "Lord knows what we'll do next year if this thing continues," wailed one of the managers after a long verbal tussle with a would-be exhibitor. "I can't see anything but the Export Exposition building, even if it is two miles away from the City Hall."

INTEREST IN SMALL CARS.

A straw which shows the possible direction of the coming trade wind is the unusual interest manifested in the smaller cars by visitors. Such cars as the Ford, the Elmore, the Crawford and the Reo were constantly surrounded by groups of interested ones, who listened with avidity to the explanations of the attendants. It is the combination of low price and utility which attracts them. The Reo especially had its admirers among the tyros—it is the most inexpensive car under the Armory roof.

One of the interesting features of the show is the original Ford, a crude and cumbersome machine. Side by side with the 1905 Ford, nothing in the exhibition gives a better idea of the immense strides the art of automobile building has taken in a few short years.

CROWDS IN ATTENDANCE.

The opening night crowd was a perfect jam. In order to allow as much room as possible for the exhibitors the management had encroached possibly a trifle too much upon the aisles, which could not comfortably accommodate the moving lines of visitors from 8 to 10 o'clock. Fortunately the galleries and the upstairs company rooms offered excellent vantage points from which to watch the crowds and listen to the strains of the band, and some of the pressure was removed from the main floor by the number of weary couples who sought these retreats to rest.

The present show is remarkable for the number of exhibits of automobile accessories and allied products on hand. Quite a number of motor boat displays are to be seen, as well as separate engines. Tire and lamp exhibits were never so numerous, while the exhibitors of special articles "no automobilist should be without" are tucked away in every odd corner, and in this respect the present show almost assumes national proportion.

MANY DEMONSTRATION CARS.

Never before has a Philadelphia show been so thoroughly equipped in the matter of demonstration vehicles "on the outside." The location of the Armory building is responsible for this. Right in the midst of the automobile district, within a few minutes' walk of the largest agencies and garages in the city, testing a vehicle on the street is rendered easy. Headquarters in most cases are so close by that it is not even necessary to keep the cars along the curb; but notwithstanding this, the curb is lined, and demonstrations seem to be the order of the day—and night.

Souvenirs are in evidence in some quarters, and it is amusing to see the avidity with which even grown men and women crowd up around these stands to secure "something for nothing."

The list of exhibitors follows:

John Wanamaker.—Under the fostering care of "Billy" Taxes, the erstwhile "circuit chaser," the Wanamaker exhibit looms up conspicuously. Here are shown the Premier and Ford lines. Of the former there is exhibited a model of the 1905 car and a chassis. The Ford line includes the

double-cylinder tonneau delivery wagon, and the runabout in addition to the 1905 four-cylinder car. Another feature of the Wanamaker exhibit, which, as in former years, is installed in a booth showing considerable artistic upholstering and decorative work, is the Rushmore Searchlight, which is quite popular hereabouts. An example of the up-to-date motor boat is shown in the Truscott launch, which the Wanamaker concern is exploiting in Philadelphia.

Fairmount Engineering Works.—This local concern makes the Chadwick car, of which one is on exhibition, a 24-horsepower 1904 model. The company is now at work on the 1905 model 24 and 40-horsepower Chadwicks, and had hoped to have them completed in time for the show. One of the complete Chadwick engines and a comprehensive display of the various component parts make up the rest of the exhibit. L. S. Chadwick, treasurer (no relative of the Cleveland Chadwick, although the same initials), and C. W. Rowe, secretary, are in charge of the exhibit.

Pennsylvania Electric Vehicle Co.—This exhibit includes complete Columbia gasoline cars and chassis. A new model of the Columbia electric and a Columbia victoria runabout are also on view. This company has recently secured the local agency for the Buick, of which a complete 22-horsepower car and chassis are exhibited.

Reo Motor Car Co.—The attraction of the Reo exhibit is the 1,450 pound tonneau car. Here is a singularly simple and compact looking car, with no frills, which the knowing ones are touting as a "comer." The Reo runabout, a single-cylinder, 8-horsepower car, weighing but 850 pounds, also looms up as a favorite in the light and handy class. F. W. Stockbridge, manager, assisted by L. E. French, has charge of this exhibit. The new local quarters of the Reo in the Mint Arcade will be occupied next week.

Keystone Motor Car Co.—This exhibit shows the complete 1905 lines of Autocar and Packard automobiles. There are four models of the Autocar, and by reason of the proximity of the company's works to this city, no other machine has a larger clientele hereabouts—or one more satisfied if the truth be told. No less than five Packards—the complete line—are shown, besides a finely finished chassis of Model N, and the various forgings and parts used in the construction of the Packard.

F. A. LaRoche Co.—This concern was able to secure but one small space at the show, and as a consequence the bulk of its exhibit of 1905 Darracq cars is to be seen at its local quarters, 317-319 North Broad street, just below the Armory. The exhibits are changing from time to time, so that those who visit the show a number of times will see the entire line of cars.

Gawthrop & Wister.—Two-cycle Elmore automobiles constitute this exhibit. The local Elmore clientele has grown largely since this concern began to push it here about a year ago, and the prospects of even a much more successful season in 1905 are bright.

Kelsey Automobile Co.—This is the infant of the local automobile colony; indeed, its local quarters are not yet out of the hands of the painters and decorators. It shows the Maxwell cars. The tourabout at $750, with double opposed motor in front, mechanical valves and shaft drive, is the "hit" of the show, price considered, while the 16-horsepower touring car at $1,400 is one of the neatest cars for the money at present being exploited here. The Maxwell quarters at 204 North Broad street will be open for inspection during the week and an auxiliary show will be held there.

Quaker City Automobile Co.—This is by far the largest exhibit in the show, embracing as it does nearly complete lines of the Oldsmobile, White, Franklin and Pope-Toledo machines. The Olds line alone includes six different cars. There are probably more Olds in this city than any other make of automobiles, with one possible exception, and Olds owners naturally congregate here to look over the points of the 1905 cars: The White, the only steam cars in the show, is represented by four machines. The Franklin exhibit includes, besides the 1905 20-horsepower air-cooled model, the famous car that crossed the continent from San Francisco to New York last year. Since last fall's race meet here, when the Pope-Toledo made almost a clean sweep of the prize list, that car has experienced a big boom in Philadelphia.

Eastern Automobile Co.—This recent acquisition to Philadelphia's automobile trade colony was early in the field for its show space, and secured Nos. 1 and 2 for its display of Peerless, Stevens-Duryea and Northern cars. The Peerless, being the car with which Barney Oldfield makes his records, is affected by the sporting element, and the speed-lovers constantly surrounded the exhibit getting pointers. The Stevens-Duryea portion of the exhibit includes several vehicles, including the new four-cylinder model. Among the Northern cars shown are two two-cylinder machines.

Martin & Hart.—One of the crack exhibits of the show, including no less than eight models of Cadillac, Thomas and Orient vehicles, for which this firm is local agent. Of the Cadillacs the single and the four-cylinder cars are shown, the latter developing 30 horsepower and attracting much attention. That portion of the exhibit devoted to Thomas machines is crowded constantly. Of the Orient there are on exhibition the new four-cylinder side entrance car with divided front seats and several forms of the Buckboard.

A. G. Powell.—Showing the Crawford automobile, made in Hagerstown, Md. The two-passenger car listed at $1,000 is alone exhibited, although the company is at work on a four-passenger vehicle at $1,650. The Crawford two-seater is a cozy looking little car with two upright cylinders of 10 horsepower. The ignition is of the jump spark variety, with double vibrating coil; fan radiator; gear driven rotary pump and Loomis float feed carbureter. The drive is by single roller chain mounted on bevel gear differential; 30-inch artillery wheels and Dunlop tires; wheel steer and two powerful foot brakes—one on transmission and the other on differential. Mr. Crawford recently made the trip from Hagerstown to Philadelphia on the two-passenger car on the high gear alone.

Smith & Mabley.—Two models of the Simplex car are shown, one with limousine body and the other with top and glass front, together with a chassis. C. Baker, manager of the local branch, has established temporary headquarters at 244 North Broad street, where he will also handle the Mercedes, Panhard and Renault cars. At this stand is a $10,000 Mercedes, the most expensive car in the show.

S. F. Bowser & Co. show several modern gasoline storage systems. E. M. Savercool has charge of this exhibit.

Locomobiles.—An extensive exhibit of this car is arranged across the end of the armory opposite the entrance. Among the exhibits is a closed body car of the Rockaway type which comes in for much favorable comment from Quaker doctors who are cranks on the subject of closed cars for winter use. William Morgan, who is also treasurer of the Automobile Dealers' Association, which is conducting the show, divides his time between the box office and the Locomobile exhibit.

Winton cars, in their various modern styles, are exhibited in charge of A. L. Maltby, manager of the local branch, who incidentally is president of the Automobile Dealers' Association, which promoted the show.

Knox pleasure and commercial vehicles attract attention at the stand within the armory and also at the Philadelphia headquarters at Sixteenth and Wood streets, close by. The exhibit was too large for the space at the armory, and a portion of it was, therefore, displayed in the city salesrooms.

James L. Gibney & Bro.—A comprehensive exhibit of Continental, Firestone and Fisk tires for automobiles—pneumatic, solid and cushion. Many auto trucks seen on Philadelphia streets are equipped with Firestone solids, and Mr. Gibney says the outlook for the coming season's tire business is excellent.

C. E. Bradley Motor Co., a Philadelphia concern, manufacturers of motors, motorcycles, castings, carbureters, spark plugs and other motor supplies, exhibits specimens of its line, making a specialty of the Bradley motorcycle equipped with engines of from 1 1-2 to 3 1-2-horsepower.

William Gilmore was compelled to accept space at the extreme end of one of the corridors, but is making a creditable display of Curtiss and Marsh motorcycles and motors, "Blizzard" adjustable storm fronts for open-front automobiles, and automobile clothing.

Hartford Suspension Co.—Two sizes of the Truffault-Hartford Shock absorber are shown at this stand.

M. P. Powers has a small exhibit where he expounds the good qualities of the Empire pipe wrench, incidentally offering the same for sale.

Lewis & Miller are exhibiting "Electro-Shine" polish for automobile metal fittings.

N. A. Petry is exhibiting the Weed chain tire grip.

Martin Tire Covers seemed to be lucky to get in at all, and are exhibited in an odd corner, covers for pneumatic, cushion or solid tires being shown.

Ideal Stamping Co.'s display consists of automobile and carriage heaters and footwarmers. John A. Green, an old Philadelphia bicycle man, is in charge.

Light Mfg. & Foundry Co.—Several styles of the Light "Thor-Bred" motorcycles are shown at this stand, also a miniature aluminum automobile. The company is making a specialty of aluminum automobile castings. E. S. Fretz, secretary-treasurer of the company, is in charge.

E. J. Willis Co. shows an extensive line of sundries and supplies of all sorts, in charge of H. D. Simmons, assisted by E. L. DeVere.

20th Century Mfg. Co.—This exhibit includes lamps, oil guns and horns. A special acetylene lamp for motorcycles is shown.

Warner Instrument Co. demonstrates the auto-meter, which is designed to register the speed at which a car is traveling and the number of miles covered.

Cushman Motor Company shows several models of the new 1905 valveless motor for boats.

Reading Standard Cycle Mfg. Co. exhibits "Thoroughbred" motorcycles; one model with side carriage.

Fred T. Lawall is exhibiting his Magic hand cleaner, a very useful article for the automobilist who cares for his own machine.

Mayo Damper Co. is showing the Mayo 2-horsepower motorcycle.

Rose Automobile Co.—The Haynes cars are exhibited at this stand, but unfortunately in a space that is far too small for the proper exposition of this fine product.

Goodyear tires are in charge of "Barrett" Fittler, the Philadelphia representative.

Dunlop detachable tires are exhibited in a variety of sizes, and also the Turner endless solid tires, at the stand of the Hartford Rubber Works.

Goodrich clincher tires, made by the B. F. Goodrich Co., are in charge of J. W. Lymann, the local manager.

Welch Motor Co.—Owing to lateness of its application this company's exhibit consists of one car, and is in the corridor, in charge of H. M. Ambler, the local agent.

McDonald & Campbell.—A great variety of motoring garments in all fabrics and furs and leathers is displayed in one of the company rooms in the Armory, in charge of A. T. Stewart, who was formerly connected with Saks & Co., of New York.

Rayflex searchlight, a little pocket lamp for use in examination of the insides of a car, is shown by C. H. Kellner.

Chas. E. Miller makes an extensive exhibit of automobile accessories and sundries.

S. C. Newbern Co.—Metal polish in liquid paste and dry power, in charge of H. F. Schwenk.

Neverout lamps are shown at the stand of the Rose Mfg. Co., and outside two of the brilliant lights point the way to the Armory to the crowds moving up and down Broad street.

Gray & Davis have the largest lamp exhibit in the show, including a full line of their "Bullets."

Indian Motorcycles are shown by the local agent, Charles Krauss, Jr.

Diamond Rubber Co.—The entire Madison Square exhibit has been brought here, in charge of L. H. Fiske, local manager.

Vacuum Oil Co. has an extensive exhibit of "Mobiloil" preparations, in charge of W. E. Mitchell.

Michelin tires, and also the Samson tire, are shown by the Philadelphia agency.

DETROIT AUTOMOBILE SHOW.

Special Correspondence.

DETROIT, Jan. 22.—While Detroit is now looking like Goldsmith's "Deserted Village," so far as the automobile trade is concerned, plans are under way for the big automobile show that will follow the Chicago show at the Light Guard armory. "We will have over a million dollars' worth of exhibits this year," said Seneca G. Lewis, secretary of the show, "and that is a mammoth showing for Detroit. If the local management had had a space four times as great as the Light Guard armory, it could have been filled easily. Demands for space have had to be refused, and the show will be comparatively small to what it would be if there was only a larger building in which to hold it. It brings to mind a long felt want in Detroit, of a mammoth building for exhibition purposes. The plan has been agitated many times and must come some time, and the automobile show may be the means of waking the people to the importance of such a building.

The great success of Detroit in the New York show is the talk of the town, and the motorists here are proud and enthusiastic. Detroit showed cars ranging from $450 to $7,000 in price, and the majority of the medium priced cars were Detroit-made also. The sales have been enormous and the local factories with one or two exceptions are running night and day. Orders have been telegraphed by the score and all the local factories are in a rush. Some are turning out 30 complete cars every twenty-four hours, and they run all the way down from this to the plant where the most costly of the local machines are made; which turns out three complete cars every twenty-four hours.

CHICAGO SHOW PROSPECTS.

All the Available Space Now Taken Up in the Coliseum.

Special Correspondence.

CHICAGO, Jan. 23.—With the opening day of the Chicago Automobile show less than two weeks away and with every inch of available space taken by exhibitors, the success of the show seems well assured. The show will open in the Coliseum, Feb. 4, and will close Feb. 11. There will be 180 exhibitors in the building and eighty different makes of automobiles will be shown.

L. L. Fest, who is looking after the interests of the coming exhibition, during the absence of Manager S. A. Miles, who attended the New York show, and is now at the Daytona races, said that eighty per cent. of the machines shown at New York will be seen in Chicago. He is preparing a chart that will show the exact position of every exhibit in the Coliseum. From Mr. Miles he received word that while the New York show was the greatest in the history of the automobile industry, it will be excelled by the Chicago show. Now the Chicago manufacturers are waiting to be "shown."

A large number of Chicago men are at Daytona this week.

DEFENDS AUTOMOBILISTS.

Chicago's Vehicle Inspector Says a Good Word for Drivers.

Special Correspondence.

CHICAGO, Jan. 23.—A word of defense for the automobilist came from Chicago's Vehicle Inspector, Patrick Ward, who has been investigating all complaints in recent accidents. It is the inspector's conclusion that the automobile has been run down by other vehicles instead of running down the carriages.

"In nine cases out of ten my investigation has led me to believe that instead of the automobile running down a vehicle while going at top speed the vehicle has in reality run down the automobile," said Mr. Ward. "It has come to be the popular belief that owners of automobiles are always wealthy and can stand to pay for any damages. Consequently the drivers have taken all sorts of chances while passing in front and about automobiles. It might as well be understood now that this office will see to it that the rights of the automobilists on the streets are respected."

Inspector Ward said that all machines that come to Chicago for the exhibition at the Coliseum must carry license tags.

The voltage of a battery or other source of electric current is analogous to the pressure in a steam boiler, while the ampere is the measure of volume. The term "ampere-hour," commonly used in rating the capacity of a battery, means a flow of one ampere for one hour.

WISCONSIN LIKELY TO HAVE STATE LAW.

Bill Restricting Speed to 15 Miles in Open Country Introduced in Legislature—Milwaukee Club Aroused and State Organization will Follow—Fair Law Demanded.

Special Correspondence.

MILWAUKEE, Jan. 20.—At the annual meeting of the Milwaukee Automobile Club, which was held in the Hotel Pfister Friday evening, the following officers were elected: President, Arthur H. Anger; first vice-president, Dr. Louis Fuldner; second vice-president, Joseph F. Merkel; secretary, James T. Drought; treasurer, W. H. Pipkorn; captain, Dr. R. J. Healy.

Two tickets had been placed in the field, and the contest developed spirited rivalry, although no bitterness was engendered. The programme for the meeting had been arranged a week in advance, at which time it was decided to hold the annual election of officers, and to listen to reports of those members of the club who had been experimenting with anti-freezing solutions and anti-skidding devices. Subsequently, however, to the time the programme was arranged, a bill was introduced in the state legislature which is considered hostile to the interests of automobilists throughout the state, and therefore the discussion of this bill was given precedence over all else, save the election of officers.

"PRIVILEGED CLASS"!! ATTACKED.

With the inauguration of a reform administration numerous bills calculated to curtail the liberties enjoyed by the so-called "privileged class" have been introduced in the state legislature, among them being one regulating the use of automobiles. The bill under discussion was introduced in the assembly by W. R. Turner last week, and has already given rise to considerable unfavorable comment among automobilists throughout the state. The bill provides that automobiles and motor cycles shall be registered by the owner or person in control with the Secretary of State, who shall give each automobile a distinguishing number, and shall issue to the applicant a certificate of registration, which shall be carried in some easily accessible place in the automobile. Upon the sale of a car the registration shall expire, and the vendor shall immediately return the certificate of registration, with notice of the sale, and name and place of residence and address of the vendee. The fee for such registration shall be $2.

SPECIAL MARKS FOR DEALERS.

Section two provides that every manufacturer or dealer instead of registering each automobile shall obtain a general distinguishing mark or number, and all automobiles owned or controlled by the manufacturer shall, until sold, or loaned for a period of more than five successive days be regarded as registered under the distinguishing number or mark given by the Secretary of State. The fee for such license shall be $10.

Section three provides that Arabic numerals not less than four inches high indicating the number or mark of the automobile shall be conspicuously displayed.

Section four provides for the licensing of all operators of automobiles and motor cycles, the fee being $2, and no man shall operate a machine unless licensed to do so.

Section five deals with non-residents, who may operate in Wisconsin subject to speed limitations, which are set forth in the bill as follows:

Fifteen miles an hour in the country and

sparsely settled districts; ten miles an hour in cities, and not to exceed eight miles an hour at crossings and on congested streets.

MUST LEAD HORSES.

One of the most objectionable provisions of the bill is the one stipulating that automobilists shall reduce their speed when passing a horse and buggy in case the driver motions. And in the event the horse is driven by women or children the driver of the auto is expected to stop completely and lead the horse by the automobile.

The last provision states that nothing in the act shall be construed so as to obstruct park commissioners or city, town and township authorities from making local regulations, even to the exclusion altogether of automobilists from certain roads.

NEW STATE ASSOCIATION.

As a result of the discussion of this bill by the Club, Wisconsin will have a state automobile association, for which plans will be formulated at once. The object of the organization will be to present a united front against any unjust legislation. The consensus of opinion was that the bill in its present form appears to be too radical to appeal favorably to any considerable number of the legislators, and will therefore not be passed. It was pointed out that any country constable would be empowered to arrest automobilists at any time, and that they would be practically prohibited from using country roads.

It was agreed that the members of the legislature, with the exception of those from Milwaukee, were bent on some sort of regulation of automobiles, and in view of this fact it was considered inexpedient to attempt to block all forms of legislation, but on the contrary to meet the people half way and demand reasonable action. In this connection, some of the members of the club vehemently denounced careless, reckless driving in the rural districts, which, it was contended, is indirectly responsible for the present agitation.

A minor matter—the selection of a club button and a signal by which members of the club may recognize each other—was also taken up and disposed of. Nicholas Leidger was elected to membership.

SECRETARY DROUGHT TALKS.

"The club in one sense is very prosperous," said Secretary Drought after the meeting. "We have $500 in the treasury and about that amount outstanding in dues. While there has not been as much interest in club affairs as there might have been during the past year, I nevertheless believe that the season of 1905 will see an awakening of enthusiasm. I have no doubt that the organization of the State Automobile Association for the purpose of securing a uniform state law and the abolition of all local laws will serve as an impetus. At the present time no plans are being made for the erection of a club house, but it is probable that within the next two months permanent quarters in some down town office building will be established.

WAS AN UNJUST VERDICT.

So Judge Kellogg Declared in Saratoga County Damage Suit.

Special Correspondence.

BALLSTON SPA, N. Y., Jan. 23.—At the January term of Supreme court for Saratoga county just completed at Ballston Spa, N. Y., a case of interest to automobilists was tried and a decision reached. The action was that of Edgar E. Poucher against Carl Broesel and Charles James Billwiller, Jr. The plaintiff is a telegraph lineman, and the defendants are New Yorkers who spent the summer of 1904 at Bolton on Lake George. On August 4, last, Broesel, Billwiller and a lady were in an automobile, owned by Broesel's father and driven by the young man. Poucher was hauling telegraph poles with a team, and in his complaint alleged that the auto frightened the team, causing injuries for which he sought to recover $5,000 damages. He alleged that the car was operated at a reckless rate of speed and that the driver did not heed the warnings to stop before the car reached the scene of the accident. The defense was that the defendant was legally on the avenue, that the machine was carefully driven and that the plaintiff was contributorily negligent. Much evidence was produced by the plaintiff and defendant, and at the conclusion of the case the complaint was dismissed as to the defendant Billwiller, it appearing that he was only a passenger with Broesel, the driver of the car.

Judge Henry T. Kellogg, presiding, in his charge to the jury said that they must find that the defendant was wilfully negligent in causing the accident. The Court said that Broesel had a right to be on the street and that the burden of proof was on the plaintiff. The jury, however, returned a verdict of $2,000 for the plaintiff. Counsel for the defendant moved to set the verdict aside on the ground that it was excessive and contrary to the evidence. The court refused to set it aside, but expressed an opinion that it was an unjust verdict. The case will be appealed and it is quite likely that the findings of the jury will be reversed.

GASOLINE ON FERRYBOATS.

New Bill Permitting Transport of Automobiles on Passenger Steamboats.

Special Correspondence.

WASHINGTON, D. C., Jan. 24.—An important bill to amend section 4478 of the Revised Statutes so as to remove certain restrictions upon the transportation by steam vessels of gasoline and other products of petroleum when carried by automobiles using the same as a source of motive power, has been introduced in Congress by Representative Goulden, of New York, and is now pending in the Committee on the Merchant Marine and Fisheries. After detailing at length what inflammable materials shall not be carried on steamers carrying passengers, the bill provides that "nothing in the foregoing or following sections of this act shall prohibit the transportation by steam vessels of gasoline or any other products of petroleum when carried by motor vehicles (commonly known as automobiles) using the same as source of motive power: Provided, however, that all fire upon any such vehicle shall be extinguished as soon as possible after it shall get aboard the vessel, and before the vessel shall have left its slip or pier, and that said fire shall not be relit until immediately before leaving the vessel, and not until the said vessel shall have reached the slip or pier at the point where the operator of the automobile intends to disembark:

"Provided, further, that any owner, master, agent, or other person having charge of passenger steam vessels shall have the right to refuse to transport automobile vehicles the tanks of which contain gasoline, naphtha or other dangerous burning fluid."

In the event of its passage the act is to take effect immediately.

NOVEL AUTOMOBILE SUIT.

Police Captain Recovers Damages from Woman Motorist for Abuse.

Special Correspondence.

BALTIMORE, Jan. 21.—The Superior Court of Baltimore yesterday awarded Captain Bernard J. Ward, a member of the police force of this city, $4,000 damages in a suit which he instituted some time ago against Mrs. Isaac E. Emerson, wife of Captain Emerson, who is one of the most ardent automobilists in the state and the owner of many fine machines. The suit was originally for $10,000 and the compromised amount is given as balm for the mental anguish which Captain Ward suffered.

The case attracted widespread interest. It grew out of the arrest of Roger Magondux, the Emersons' chauffeur, on October 22, 1903, for exceeding the regulations restricting the speed of vehicles in the park. After the arrest of the chauffeur he was taken to the station house, over which Captain Ward presided at that time, and while there it is alleged that Mrs. Emerson applied such epithets as "thief," "liar," "puppy," "cattle," "common herd," and the like to Captain Ward and to two of his men, also threatening the captain, it is alleged, with the loss of his position. Mrs. Emerson preferred charges against the officers before the police board, but they were later withdrawn.

The interest in the trial has been great, and the crowds which have attended the sessions of the court have been the largest in the history of Baltimore, more than five thousand persons having attempted to gain admission to the courtroom.

It is the first time in the history of the city that an automobile has figured in a civil suit. The one in question was brought around to the courthouse on the second day of the trial—it lasted four days—and when recess was declared the members of the jury went out and listened to a minute description of the condition of the machine on the day of the chauffeur's arrest. The car was run about the street for them, started, stopped and backed, and the motor was run at full speed, so that the noise it made might be heard and appreciated. This was done because when charged by one of the officers with telling Magondux to "kill the puppy," Mrs. Emerson replied that the officer could not have heard any such statement, even if it had been made, while the machine was running. The car was also used in a practical test with the object of demonstrating the same thing. A horseman declared that during the experiment he met Mrs. Emerson and her daughter in the park and rode alongside them. He said that he listened intently, and although he could occasionally hear inarticulate sounds, he could not distinguish what was said. All during the drive he was less than a foot away from the automobile.

A motion has been made for a new trial by Attorney John P. Poe, of the famous Maryland Poe family, and Mr. Cook, the defendant's attorney.

The owner (after perusing bill for auto repairs)—Whew! I didn't think for a moment it was going to cost me that much. Can't you shave it a bit?

The Repair Man (grudgingly)—Well, us poor devils have to live, you know, but I'll tell you what I'll do—I'll risk taking the car and call things square.—*Town Topics.*

Charles M. Schwab probably finds it hard to understand why Mr. Tom Lawson should insist on all this trouble instead of buying plenty of automobiles and enjoying his money.—*Washington (D. C.) Star.*

CHICAGO CLUB'S BUILDING.

Plans Drawn for a 5-Story Structure to Cost $150,000.

Special Correspondence.

CHICAGO, Jan. 23.—The Chicago Automobile Club's new home is now a thing of the near future. The building committee has announced that an option for a ninety-nine year lease has been secured on a lot 96 by 93 feet, on Plymouth place, south of Jackson boulevard. Plans for the building have been completed. The committee consists of the following men: Frederick H. Bartlett, W. G. Lloyd, T. J. Hyman, Robert Tarrant, Jr., and Donald A. Sage.

The building will be five stories in height and devoted exclusively to club uses. The first floor will be used for a garage. On the second will be the men's lounging rooms, grill rooms, billiard rooms, barber shop, bowling alleys, and card rooms. On the third floor will be the women's reception rooms, library, dressing rooms and a general dining room. The fourth floor will be taken up with sleeping rooms and bath rooms. The basement will be used for a repairing establishment.

The cost of the structure when completed will be about $150,000. The reports of the committee have been received with much enthusiasm and the work of the construction will be commenced this spring. The club now has more than 500 members.

PIKE'S PEAK HILL CLIMB.

Special Correspondence.

DENVER, Col., Jan. 22.—G. A. Wahlgreen, of Denver, has written from New York that the Pike's Peak climbing contest has taken a greater hold on the racing people than he had hoped. Mr. Wahlgreen was at the New York show during the week, where he met all the leading automobile pilots, as well as those owners interested in racing. Though the details of the coming trial have not been arranged, Mr. Wahlgreen received assurances that the best of the drivers would be on hand for the trial. The rich men who have been taking chances on fast racing on hard climbing are anxious to be in with their machines.

Motor cycle enthusiasts are again agitating the proposed plan to install at Denver an eight-lap saucer track similar to the one that has been successfully operated in Salt Lake. The scheme was much discussed the early part of last fall, and Denver was to become a member of the Salt Lake and Ogden circuit. It is said that men with plenty of money stand ready to back such an enterprise, believing that racing of this character is by no means dead. John A. Payment, of Denver, a cycle and automobile man himself, is much interested in the success of the proposed track.

THE NEW FORD RACER.

Special Correspondence.

DETROIT, Jan. 22.—Henry Ford is confident that he will establish a new world's record at the Ormond Beach races. Before leaving Detroit for the course by the sea last week he said: "I think my new racer ought to clip things down to about 30 seconds. If some of the heavier foreign cars are doing a mile in 37 or 38, I ought to go it in 7 or 8 seconds better with this light arrangement. It was built for speed. Whether it will go or not is still a question, but I think it can. A few days will tell anyway."

The new Ford racer weighs but 1,400 pounds, and has 60 horsepower. It is neat, lean, compact and light, and devoid of all useless weight.

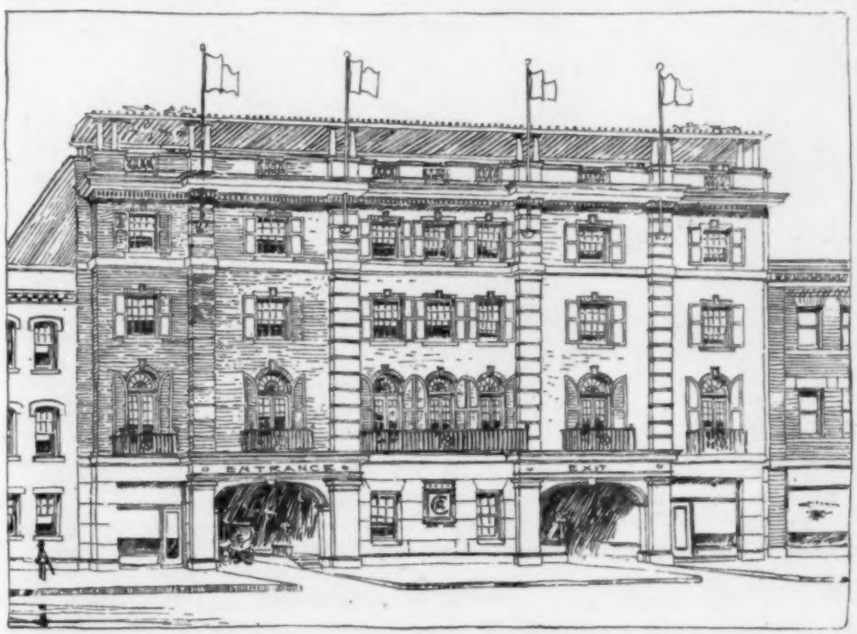
Would Tire His Jaws.

A Cambridgeshire farmer was recently arguing with a French chauffeur, who had slackened at an inn, on the merits of the horse and the motor car.

"Give me a 'orse," remarked the farmer, "Them travelin' oilshops is too oncertain for me."

"Eet ees prejudice, my friend," the chauffeur replied. "You Engleesh are behind the times. You will think deefairent some day."

"Behind the times be blowed," came the retort. "P'r'aps nex' time the Proosians are around Paris, and you 'ave to git your dinner off a steak from the 'ind wheel of a moty car, you Frenchies'll wish you wasn't so jolly well up to date."—*Birmingham (England) News.*



CLUB HOUSE COSTING $150,000 TO BE BUILT BY CHICAGO AUTOMOBILE CLUB.

PRIVATE SPEEDING TRACK.

Proposal to Construct a Five-Mile Course in New Jersey.

For the purpose of providing a track or course of sufficient length to enable automobiles to race at higher speeds than is possible on tracks now in existence, the Atlantic Coast Motor Speedway Association has been formed in New York City, with Ralph B. King as secretary and Major Charles J. S. Miller as treasurer. W. J. Morgan, of 116 Nassau street, New York, will be general manager. It is proposed to build a five-mile track of approximately triangular form on the Atlantic coast near Barnegat Bay, 12 miles south of Lakewood, N. J., on the lines of the New Jersey Southern and the Philadelphia and Long Branch railroads. The track will be 120 feet wide, and there will be a straight mile for mile speed trials. Opposite the mile stretch will be a grand stand capable of seating 10,000 persons. A club-house will be built on the bay, where a landing will be provided for boats, eight feet of water being available for bringing in yachts. It is reported that good roads exist between the proposed site, and both New York and Philadelphia, so that the trip can be made by automobile, the distance from each city being approximately the same. The two railroads whose lines pass close to the property will be asked to run spurs into the grounds, so that the place may be reached by rail as well as by water and by road.

A tract of land 2,000 acres in extent has been secured, it is said, and an additional 2,000 acres will, according to the proposition, be leased to be used as a game preserve for the members of the association, the district being known to sportsmen as a shooting ground. The fishing in the neighborhood is said to be good also; and further, the bay will furnish a good sheet of water for auto-boat racing.

It is proposed to issue 400 shares of stock at $1,000 each. If arrangements are carried out according to the present plans of the promoters, the track will be ready for use in the summer of 1906.

WINTER BUSINESS IN DENVER.

Special Correspondence.

DENVER, Colo., Jan. 22.—"Colorado as a winter resort" has not presented much attraction for automobilists during the past two weeks. Zero weather and much snow and rain, and the spring-like weather that has followed, has made the roads in all directions from Denver nothing more nor less than mud beds. One party last Friday attempted to make the run to Colorado Springs, a distance of fifty-two miles, but after covering eighteen miles of the trip through ice and mud they became discouraged and turned back to town.

A lively business is predicted by every dealer who has expressed himself; winter here does not have any permanent dampening effect on the automobile business and with the first hint of spring a rush is expected. One prominent dealer in particular who has been in the East on a business trip, states that he has en route the largest consignment of automobiles that he has ever brought to town. Other dealers state that business is unusually good for this season.

The effects of the Motor Vehicle Company, of Louisville, Ky., including a lot of furnishings and eight automobiles, were sold at public auction on Jan. 21. The machines went for a song apiece, and the furnishings were practically given away.

FRANK H. CROKER.

The sudden death of Frank H. Croker ends a career which was as brilliant as it was brief, but which had already won him an enviable place among American sportsmen. There are many whose love of sport leads them to participate in numerous forms of competition, there are others, in lesser number, whose first devotion is toward the golden rule, which is the only true basis of fair sport. Mr. Croker represented an exceptional combination of qualities in his high standard of sportsmanship and in his personal participation in a very large number of sports. He was an enthusiast in baseball, football and golf, and more recently in launch racing and automobiling.

Though only 27 years of age, he was engaged in active business as secretary of the Roebling Construction Company, while he was a director of this company, and also of the Atlantic Coast Realty Company and the Casualty Company of America. While attentive to business, all of his spare time was given to sport. During his college career at Brown University, which ended with his graduation in 1901, he was a member of the baseball team and the football team, making an exceptional record as a bold and skilful player. He was equally successful as a golf player, taking part in many tournaments, and was considered an expert judge of bull terriers and the owner of successful kennels.

Possessed of natural mechanical tastes, he took up the automobile some years ago and soon became noted as a skilful driver; within the past two years he has been widely known as one of the most promising of the young American amateurs. His personal bravery and fearless courage were supplemented by more than average mechanical ability and exceptional skill in the handling of a car at speed. As shown by his persistence on the course in the Vanderbilt cup race when his car was practically in pieces and liable to wreck itself at any moment, he had no sense of fear nor appreciation of personal danger.

Mr. Croker was a firm believer in the American automobile, and in spite of the many difficulties encountered by the builders of the Simplex in their first attempt at a racing car he was faithful to them; the disabled cup racer being immediately rebuilt for the Empire track races, in which he scored new records, and for the Eagle Rock climb.

Though comparatively a novice in autoboat racing, Mr. Croker handled his launch *X. P. D. N. C.* with the skill of a veteran, as instanced no less by the notable start which he made in the Poughkeepsie race than by the excellent performance of the boat under his management in that long run.

With much of his father's taciturnity, he was nevertheless very popular with all classes, making many warm personal friends; he was a member of Psi Upsilon fraternity, the New York Athletic Club, the Brown University Club, the Democratic Club, and the Automobile Club of America.

Miscellaneous Notes.

The National Association of Automobile Manufacturers has granted a sanction for an automobile show to be held in Denver, Colo., in April.

The Fauber company, which was located at Elgin, Ill., until the destruction of its plant by fire, is winding up its business in Elgin and preparing for the establishment of a plant at Lapetre, Ind.

The firm of Currie & Mills, Battle Creek, Mich., has been succeeded by the Currie Motor & Cycle Co., Mr. Mills having retired. Mr. Currie will continue the business at the same place—87 Main street, west.

C. C. Boynton, recently with the Worthington Automobile Co., has been appointed special representative of the Continental Caoutchouc Co., American distributors of the Continental tires, and will call on manufacturers and distributing agents.

The Monarch Automobile Co., of Chicago, has plans on foot for the formation of a joint stock company in Aurora, Ill., where it is proposed to erect a plant for the manufacture of automobiles. The Monarch company has already a large factory in Chicago.

An addition to the automobile plant of the Studebaker Bros. Mfg. Co., at South Bend, Ind., will be built during the coming spring, at a cost of $175,000. The plans, which have already been approved, call for a five-story structure covering an acre and a half of ground.

C. A. Coey & Co., Chicago representatives of the E. R. Thomas Motor Co., of Buffalo, have leased a large store at Nos. 1323-1325 Michigan avenue, Chicago, as a downtown salesroom. The garage and salesroom on Cottage Grove avenue will still be maintained, as the business is sufficient to warrant the keeping of both places.

At a meeting of the Fisk Rubber Tire Co., of Chicopee Falls, Mass., on January 12, the following directors were elected: A. N. Mayo, H. T. Dunn, H. G. Fisk, Edward Pynchon, W. T. Baird, P. T. Jackson, Jr., and E. H. Broadwell. The list of officers of the company was increased by the addition of first and second vice-presidents, the positions being filled by E. H. Broadwell and Frank C. Riggs, respectively.

The Supreme Court of Delaware has decided, during the past week, that the Street and Sewer Department—and not the City Council—has absolute control of the streets of Wilmington; and, that being the case, the ordinance regulating the operation of automobiles, which is now pending in the City Council, is not likely to be acted upon. The Street and Sewer Department will probably take the matter up at once and pass such an ordinance.

Automobilists who take delight in the gentle art of gardening should be interested in "The Garden Magazine," a monthly magazine devoted to practical gardening, published by Doubleday, Page & Co., 133-137 East Sixteenth street, New York City. The magazine is turned out in the style well known to readers of "Country Life in America," published by the same firm, and is both practical and attractive to the eye.

The effort at present being made by the Rapid Transit Company to lay tracks on Philadelphia's famous fourteen-mile boulevard—Broad street—is beginning to meet with various opposition. In the fight against the defacement of the city's pet thoroughfare, it is likely that the drivers will be found shoulder to shoulder with the automobilists.

A bill aiming to regulate the speed of automobiles on the roads of the State of New York has been prepared by the West End Association of New York City through its counsel, J. C. Coleman, and, it is reported, will be introduced at Albany by Senator Saxe and Assemblyman Wilsnack, of Queens. The proposed measure gives magistrates the option of fining a guilty driver or sentencing him to 30 days' imprisonment, hoping thus to discourage automobile speeding on the highways.

The New York Motorcycle Club held its annual election of officers during the week of the Madison Square Garden automobile show, New York. Officers for the ensuing year will be as follows: President, Roland Douglas; Vice-president, D. Bruce-Brown; Secretary, F. W. Horenburger; Treasurer, P. J. Lahm; Captain, A. J. Bendix; First Lieutenant, J. F. McLaughlin; Second Lieutenant, H. Jehle; Directors, C. W. Nason, W. H. Hale, George P. Jenkins and M. E. Toepel.

The Delaware Automobile Association will probably be a prominent factor in entertaining the members of the General Assembly of Delaware in this city on Jan. 28, when they are to be the guests of the Mayor and Council. It is proposed to give the Assemblymen an automobile trip, and the association members have been asked to loan some of their machines. Besides the automobile parade, which is to take place in the morning, there is to be a dinner at noon and a review of the Police and Fire Departments in the afternoon.

The New York branch of the Continental Caoutchouc Co., of Hanover, Germany, gave a dinner at the Hoffman House, New York, to its representatives who were visiting the automobile show. During the course of the dinner conversation naturally turned to tires, and discussion brought out a number of opinions regarding the use of pneumatics. It was agreed that tires were not, as a rule, pumped up hard enough by users, and the use of a powerful pump in connection with a gauge was recommended. The use of heavier tires for rear wheels and lighter tires in front was favored.

A report having been spread broadcast that the officials of the town of Hammonton, N. J., (the half-way point on the Philadelphia-Atlantic City route), had been unnecessarily severe in the enforcement of its speed ordinance, during the past year, officials of the Automobile Club of Philadelphia, appointed a committee to investigate the matter. It was discovered that there is but little truth in the reports—as a matter of fact, but six arrests were made during the entire year. Of these, two were for reckless speeding, three for failure to carry a New Jersey license, and one for not having numbers on the lamps. The club published its findings in the Philadelphia papers, and complimented the Hammonton officials on their leniency and justice on all occasions. Such methods cannot but have a beneficial effect upon the relations existing between town officials and the automobilists who frequent that much-traveled route.

Prevention is a lot better than cure. If, before getting his hands covered with grime and grease, the automobilist would rub into them some good toilet soap, filling all the cracks and crevices and also the finger nails, he would prevent the dirt from working into the skin, and so make the washing-up operation far less difficult.